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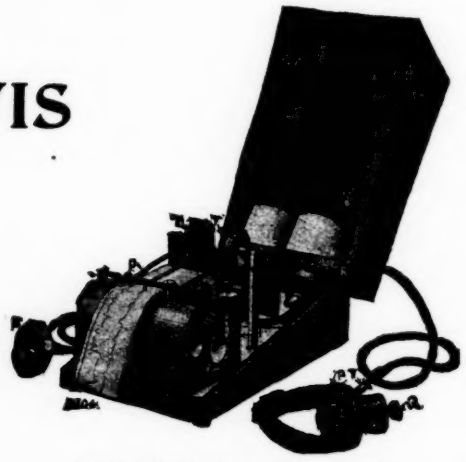

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An Address
ON
THE MORTALITY OF APPENDICITIS.*

BY
JOSEPH E. ADAMS, M.S., F.R.C.S.,
SURGEON TO ST. THOMAS'S HOSPITAL.

THE incidence of a disease and its mortality are the two criteria by which the capacity of the medical profession should be judged. To prevent we must eliminate cause. The cause or causes of appendicitis have been a subject for both speculation and research for more than thirty years, but little has been established beyond the fact that the appendix is a dangerous possession. Its removal is therefore the surest method of preventing appendicitis, and the practice of removing an appendix which is to all appearances healthy, when the abdomen is opened for some other operative procedure, is quite sound provided it does not delay matters and add to the difficulty of the operation in hand. There has been talk of a function for the appendix, but as far as I am aware no one really knows what it is, and, surgically speaking, it is not an organ—it is a nuisance. Unfortunately the risk of an abdominal operation can never be reduced to that of having one's hair cut, and therefore preventive appendicectomy is customarily limited to those cases where there is evidence of a present or past attack.

Unless an epidemic occurs it is difficult to be dogmatic concerning the incidence of any particular disease. The increase or decrease can be gauged by personal impressions on the part of practitioners, by the collected statistics of institutions, and, lastly, by the returns of the Registrar-General. The last mentioned are certainly the most reliable source of information, but, unfortunately, they deal only with fatal cases. Mortality is not a fair criterion of incidence. If it be accepted that where mortality figures show an increase this must mean a rise in incidence, then much of what I wish to say becomes pointless. The chief value of the Registrar-General's statistics is that they cover the whole of England and Wales, bearing relation to some forty million inhabitants. Institutional figures are not easy to obtain so that they can all be massed in one total, and the impressions of practitioners, so far as I have been able to benefit by them, do not support the view that appendicitis is noticeably on the increase. The question has been carefully studied by Rendle Short.[1] He states that "appendicitis did not become a separately notifiable and recorded cause of death until 1901." This was about the time of King Edward's historic operation for appendicular abscess on the eve of his coronation. The figures Rendle Short quotes end with 1918. His conclusions are important, and those which bear most directly on our subject are as follows:

1. Appendicitis was present, but was relatively rare in this and other countries until the end of the nineteenth century. Since then it has become very common in most highly civilized countries.
2. The rise in Bristol, and probably throughout England, was beginning in 1895, and was pronounced between 1895 and 1905, since when it has been fairly stationary.
3. This rise was most marked at first in towns, in the male sex, and probably amongst the better-off class.
4. The privations of war did not reduce it.

Six years have passed since 1918 and the mortality is certainly higher. In 1918 the number of deaths shown by the figures published by the Registrar-General was 2,416; in 1923 it was 2,826. If the last part of Rendle Short's second paragraph is correct we have ample justification for inquiring why the returns of the Registrar-General show a steady rise in the death rate. I show below the complete figures from 1913 to 1923 inclusive, with their relation to the population (irrespective of sex). I take 1913 because it is a pre-war year, and 1923 because it is the last year available. The figures for the war years refer only to the civil population, and as this meant the withdrawal of a large number of males from the statistics they are no doubt vitiated.

Deaths from Appendicitis and Typhlitis.
(Registrar-General's Returns.)

Year.	Male.	Female.	Total.	Persons per Million.
1913	1387	1141	2528	69
1914	1573	1111	2684	71
1915	1441	1062	2503	67
1916	1474	1129	2603	70
1917	1390	1053	2443	67
1918	1298	1118	2416	66
1919	1278	1151	2429	66
1920	1389	1142	2531	67
1921	1474	1237	2711	72
1922	1524	1211	2735	72
1923	1608	1218	2826	74

It may be urged that deaths from peritonitis of unstated origin will show a decrease *pari passu* with the rise in appendicitis deaths. Such, indeed, is the fact, but the total decrease from about 490 to 420 is far too small a figure to afford an adequate explanation for an addition of nearly three hundred deaths from appendicitis. Nor do I think that any satisfaction can be extracted from the variation of the total number of inhabitants of England and Wales. A sufficiently striking contrast is afforded by the difference between the year 1920, when demobilization of the army was completed, and 1923, the respective figures being 67 and 74 deaths per million. These are post-war years, and my own view is that we should be justified in looking for a decrease. Instead there is a rise in these deaths, which most surgeons would be inclined to regard as preventable.

In order to gain further information as to the incidence of the disease I have obtained figures from the leading hospitals and Poor Law institutions in the London district. These should reflect the incidence in the London population, and I have endeavoured to get figures down to the year 1922. The hospital cases show slight diminution since 1912, and the infirmary figures a definite increase. The explanation of this turnover from hospital to infirmary is that the general practitioner, realizing the urgency of cases of appendicitis and the lack of empty beds in the hospitals, prefers to send his cases where he knows they will be admitted without delay. This attitude is, no doubt, correct, and it remains only to demand that the treatment of the infirmary shall be as good as that of the hospital. The mere change of name from "infirmary" to "hospital," which has become the fashion since the war, will not suffice. There must have been a change of spirit and an increased keenness and capacity on the part of the Poor Law medical officers. Such I believe to have been the case, but I regret that these institutions collectively have been unable to supply detailed figures which could be instructively tabulated. The surgical equipment of many of them may well be the envy of the voluntary hospitals, but down to ten years ago this was not the case, and I believe the merits of surgery were largely overlooked by the guardians until the war enlightened them.

Both hospital and infirmary authorities have kindly replied to my inquiry, but the figures obtained are not sufficiently uniform to be massed together. Such figures have little or no bearing on the occurrence of the disease amongst the rural population, as it is recognized that long journeys are forbidden for acute cases, and most country practitioners do not trouble the London hospitals with their appendix cases. So far as the evidence of general practitioners has been available I have not found that it points to any particular increase in either the incidence or the severity of attacks of appendicitis.

MORTALITY.

At this stage of my argument I propose to leave the statistical method and consider the pathological side of the question. The death rate is certainly proportional to the degree of sepsis present before the case comes under treatment. If an inflamed appendix can drain into the caecum the attack will subside favourably, and this is the state of affairs in catarrhal appendicitis, the mortality of which is *nil*. If a diseased appendix drains by perforation into the peritoneal cavity the prognosis is grave.

* Delivered in opening a discussion in the Section of Surgery of the Royal Society of Medicine.

A localized abscess may form, and this may be successfully dealt with by Nature or the surgeon. There is little doubt that appendicular pus may be absorbed and disappear without anything more serious than temporary impairment of the patient's health. Appendix abscesses also do burst into the bowel, and if pus is discharged with the faeces the patient may escape the consequences of perforative appendicitis. The two conditions which may precede perforation are ulceration of the wall of the appendix or obstruction of its lumen. In the latter case the tension inside the appendix ultimately becomes so great that it bursts like a distended paper bag, and most surgeons have experienced this during a difficult operation for appendicitis in the obstructed stage. In the former condition local necrosis of the wall, proceeding from mucosa to serosa, occurs without distension. There is no doubt which is the more serious event. The ruptured appendix pours a quantity of infective material into an unprepared peritoneal cavity. The ulcerated appendix is rather comparable to the leaking gastric ulcer. Protective steps on the part of that very useful ally, the omentum, are likely to have been taken, and a perforated appendix is not infrequently rendered almost harmless by being wrapped up in a covering of omentum. The analogy with the large and small gastric perforation is striking. It is rare to find evidence that the omentum has made any attempt to lessen the size of a large perforation of the stomach. Such perforations, on the other hand, are often obscured by reason of the reaction of the omentum, that energetic "plumber" of the peritoneum.

If, then, the mortality of appendicitis is to be abolished by treatment of the disease, sepsis must be eliminated, and the problem becomes one of early diagnosis. This is an ideal which is not likely to be attained, certainly not until it is recognized by the public in general, and mothers in particular, that stomach-ache is not an indication for a dose of castor oil. The mortality of appendicitis ever since it was first classified by the Registrar-General as a cause of death has always been highest between the ages of 5 and 15. This corresponds to the period when the mother is most apt to dose her offspring with aperients, and also that when the doctor finds the interpretation of symptoms extremely difficult. The liability of the doctor only begins with the first consultation, and the treatment of appendicitis is appendicectomy. Medical experience all goes to show that there are two safe periods for operation—one within twenty-four to thirty-six hours of the onset of disease, the other when the inflammation has subsided. With regard to operation in the acute stage, the capacity of the peritoneum is such that although sepsis may be encountered the convalescence of the patient is rarely affected by it. This means that the mortality is little higher than that of the interval operation, which is usually about 0.5 per cent.

TREATMENT.

If the incidence has not gone up, why is it that the number of deaths has increased? Can there be anything wrong with our treatment of appendicitis? In his presidential address to the Section of Surgery of the Royal Society of Medicine two years ago Mr. James Berry[2] raised this question. He called attention to the fact that both the public and the medical profession were under the impression that the custom of operating freely for acute appendicitis had resulted in great saving of life. Would that the Registrar-General could support this optimistic view. Mr. Berry hinted that all was not well with the surgery of the appendix, and that greater care was needed in the selection of cases for operation as regards both time and manner. It may therefore not be out of place to review briefly some of the important steps in the history of the treatment.

We start with the beginning of this century. It then required a physician to diagnose the disease and a surgeon to operate on it when required. This plan gave the physician a deal of anxiety and caused the surgeon considerable vexation. Frequently the operator complained that he was not called in soon enough. The physician's attitude gradually underwent a change, and the late Sir William Osler crystallized the position when he wrote in a late edition of his famous textbook, "There is no medicinal treatment for appendicitis."

There being no scope for drugs, and the diagnosis becoming simple, the physician tended to withdraw from the case. This was the surgeon's opportunity, and the late Edmund Owen, rather more than twelve years ago, was perhaps the most insistent on immediate operation, and immediate appendicectomy, as soon as the diagnosis was made. Postulating that no one could tell the actual condition of the appendix by abdominal examination he made out a strong case, and I think I am right when I say that he carried the bulk of surgical opinion with him. Discussion there certainly was, but the main effect was to enlighten the public and to place the treatment of appendicitis on a firmer surgical footing. The notable achievement was that the practitioner learnt to rush his appendix cases into a surgical home, or hospital, as early in the disease as he could. The Hippocratic facies disappeared, and it did not take long to prove beyond dispute that the mortality for appendicectomy in acute appendicitis when the disease is so limited is very little higher than that for the interval operation.

Sir George Beatson was perhaps Owen's most strenuous opponent, and he advocated a policy of delay. This is in accord with the experience of the American surgeon Ochsner, who since 1892 has practised a policy of delay in appendicular cases. Ochsner maintained that absolute rest in the Fowler position, with only water by the mouth, and the withholding of aperients and morphine, would cause a subsidence of symptoms and an improvement in physical signs in a very short time, even in cases with general peritonitis. That resolution of an inflamed appendix could be confidently expected under this treatment gave the surgeon a new opportunity to practise the art of the physician. Appendicectomy was, and still is, the goal to be aimed at, but the time for the operation is best selected by the operator. It has long been known that the majority of deaths occur amongst cases operated upon from the third to the sixth day of the disease. Therefore if cases can be successfully watched until these days are passed the mortality should be lowered. Many of the cases first seen at this period have an inflammatory mass in the right iliac fossa with little rigidity elsewhere. All such should be classified as having local peritonitis. Some others have general peritonitis. If all these cases are treated by appendicectomy at sight a high mortality must be faced. The patient has already absorbed toxins, and his resistance is an uncertain factor. The disturbance of appendicectomy may just turn the balance of toxic absorption against him before he has had time to develop antibodies and neutralize the toxins present. If all such cases are treated by the Ochsner method, the most favourable result obtainable will be resolution in some and local abscess formation in others. Experience in this country seems to show that there will still be a certain proportion where the symptoms will progress, and because of increasing pain, rising temperature and pulse, and worsened facial aspect, the surgeon will feel impelled to operate. This aspect of treatment has recently been studied by Mr. McNeill Love,[3] and two very interesting papers have been published by him based on the statistics of the London Hospital. He agrees with every other observer that cases operated upon during the first twenty-four hours show a low mortality—namely, 0.9 per cent. The same death rate holds for all cases where the disease is limited to the appendix.

The recognized mortality for the so-called interval operation, where inflammation is presumably in abeyance, is rather less than this—namely, 0.5 per cent. Love presents two tables which give the mortality of acute appendicitis treated by immediate operation and by postponed operation. Operation in both instances means appendicectomy, and immediate operation shows a percentage of deaths as high as 5.8, whereas cases treated on delayed lines are only fatal in 3.5 per cent. These figures are important because the immediate operation cases include a high proportion with general peritonitis—one-seventh of the total—and these have a mortality at the London Hospital of 20 per cent.

Statistical proofs are often looked upon with scorn, but nevertheless a surgeon is influenced by his own statistical results, and it behoves us all to know, and to watch, our

personal figures. For this reason I have prepared, with the aid of Mr. A. C. Halliwell, until recently surgical registrar at St. Thomas's Hospital, and now resident assistant surgeon, figures for the years 1919 to 1923, which may be usefully compared with those published by Mr. Love in the *British Journal of Surgery*. These latter are from the London Hospital, and refer to the years 1920 to 1923.

TABLE I.—*Cases Operated on within Twenty-four Hours of Onset.*

	London.	St. Thomas's.
Number of cases	221	303
Recovered	219	296
Died	2	7
Mortality per cent.	0.9	2.3

TABLE II.—*Cases Treated on Delayed Lines.*

	London.	St. Thomas's.
Inflammation Subsided:		
Number of cases	232	143
Recovered	227	143
Died	5	0
Mortality per cent.	2.1	0.0
Unsuccessfully Delayed:		
Number of cases	109	71
Recovered	102	62
Died	7	9
Mortality per cent.	6.4	14.0
Total:		
Number of cases	341	214
Recovered	329	205
Died	12	9
Mortality per cent.	3.5	4.2

TABLE III.—*Cases in which Immediate Operation was Performed.*

	London.	St. Thomas's.
Inflammation limited to the Appendix:		
Number of cases	633	348
Recovered	627	345
Died	6	3
Mortality per cent.	0.9	0.8
Local Peritonitis:		
Number of cases	467	271
Recovered	438	257
Died	29	14
Mortality per cent.	6.2	5.2
Local Abscess:		
Number of cases	347	95
Recovered	331	91
Died	16	4
Mortality per cent.	4.6	4.2
General Peritonitis:		
Number of cases	230	187
Recovered	183	132
Died	47	55
Mortality per cent.	20.5	29.4
Total:		
Number of cases	1677	901
Recovered	1579	825
Died	98	76
Mortality per cent.	5.8	8.4

TABLE IV.—*General Peritonitis Cases.*
(All treated by immediate operation.)

Day of Attack.	London (230 Cases). Per cent.	St. Thomas's (187 Cases). Per cent.
First	6.6	10.6
Second	29.8	46.5
Third	35.6	21.3
Fourth	13.3	9.0
Fifth	6.6	5.8
Sixth	4.7	1.0
Seventh	1.1	3.7

With regard to Table I the higher mortality of the St. Thomas's column may perhaps be excused by the fact that the notes record a rather high proportion of what are called fulminating attacks. Anyhow the figure is higher than it ought to be for such early operation, where the presumption is that the disease is limited to the appendix itself. The last table will show that 10 per cent. of our cases of general peritonitis gave a history of only twenty-four hours, and I shall comment on this later.

Table II seems to show that St. Thomas's has gained in the first section the patients it lost in Table I, and I rather think in reading Mr. Love's paper that the operation has been undertaken unduly early, and thus the higher mortality at the London Hospital is accounted for. I think no great clinical acumen is required to recognize that a large number of cases come to hospital with more than twenty-four hours' history, when the attack is obviously subsiding, and these, if sufficient patience is exhibited, will go far to improve the statistics under this heading. They are cases which without a twenty-four hour rule could be dealt with at once and do no harm to the mortality table. The heading "Unsuccessfully Delayed" is more important, and here I freely admit that our high figure of 14 per cent. is attributable largely to the pernicious system of dual control.

There are one or two points of difference in the practice of the two hospitals to which I should like to draw attention, and I have to thank Mr. Love for information so far as the London Hospital is concerned. In the first place, he tells me that all appendix cases are treated in the surgical wards at that hospital; that many of the surgeons adopt the expectant line of treatment in late cases more or less as a routine. At St. Thomas's Hospital, on the other hand, very little expectant treatment is indulged in on the surgical side, and a large number of appendix cases are still admitted to medical wards. Cases there are seen in the first instance by the resident assistant physician and surgeon, and where the disease appears limited to the appendix or the patient appears to have general peritonitis, immediate operation is arranged for. Where an appendicular mass is diagnosed the case is commonly admitted on the medical side, and here expectant treatment is practised. Dual control I have no hesitation in condemning, and I am convinced that it does not serve the interest of the patient; appendicitis is a surgical disease, and the man who sees and handles the interior of the abdomen is surely the one to make the most accurate estimate of the physical signs. A study of the nine fatal cases in our series of seventy-one shows that the mortality was attributable to imperfect appreciation of the degree of infection, and not to the fact that operation was done in the dangerous period of the third to the sixth days. Three of them had general peritonitis when the delayed operation was performed, and an equal number a subphrenic abscess, while the remaining three had obstruction of the small bowel.

If we turn now to Table III we shall see that at both hospitals the mortality is weighed down by the cases of general peritonitis. We all know that if our ideals of diagnostic accuracy could be reached the number of these widespread infections would shrink very considerably. General peritonitis is rare with only one day's history, and if we cut out these cases altogether and perform immediate operation on all cases, as shown in Table III, the St. Thomas's mortality comes down to 2.9 per cent. and that of the London to 3.5. These are very respectable figures, and seem to me to justify the gospel of immediate surgical treatment. To strengthen this view I have prepared a fourth table, which deals only with cases of general peritonitis, and shows the day of the disease when they were operated upon in accordance with the principle of immediate attack. It will be obvious that it is the first twenty-four hours which give the diagnostician his chance. It matters not whether he be general practitioner, physician, or surgeon—he must make up his mind early or the risk to the patient will be increased. It may not matter vastly who does the surgery, but it does matter when the patient first comes under medical observation, and who sees the case. Diagnosis will always be the highest art both in surgery and in medicine, and let us recognize that herein lies the chance of practising preventive surgery, which alone can bring down the mortality of this disease to a level consistent with the pride of our profession.

I think I shall find general agreement when I say that there are three main types of acute appendicitis viewed from the clinical aspect. There is one where the disease is limited to the appendix, characterized by local pain, local tenderness, and usually hyperaesthesia of the skin above Poupart's ligament. To the second variety the old-fashioned name of "perityphlitis" might still be applied, for the infection has passed beyond the confines of the appendix, which itself is often gangrenous and usually perforated. The infected peritoneal zone is that of the right iliac fossa or the pelvis. A localized abscess, an inflammatory mass without evidence of pus, or infection ill limited by adhesions, may be in existence at the time the patient is seen. The third main class is that where

there is widespread inflammation, diffuse rigidity of the abdominal wall, very little respiratory excursion, and an anxious expression on the face of the patient. In this last type general peritonitis may be inferred.

If it is true that immediate operation in the first class carries with it a death rate of 1, or less than 1, per cent., I think we shall all agree that we have learnt the correct line of treatment. Personally I do not feel disposed to pay very strict attention to the alleged day of the disease. Appendicitis seldom exhibits the dramatic onset of a gastric perforation, and frequently there is a day or two of ill health before actual pain is felt. I think there may be marked pathological changes in the appendix which cause no pain at all, and they may certainly give rise to no vomiting. If so, the patient may easily be forty-eight hours out in his length of history. If the clinical signs point to appendicitis proper, appendicectomy is the quickest route to restored health. This is in accordance with the view that one can never tell what the diseased appendix will do next.

In the case of general peritonitis I doubt if a policy of "wait and see" has much to recommend it. When it was always thought necessary for a physician to diagnose and a surgeon to operate, some fifteen to twenty years ago, the mortality was 70 per cent. at St. Thomas's. Now it is 29 per cent., and at the London Hospital 20 per cent. These cases still bulk far too largely in our tables, for in the London Hospital cases 13 per cent. of the total treated by immediate operation had general peritonitis, and at St. Thomas's 20 per cent. In spite of this our hospital figures are better than they were fifteen years ago; and I think the credit of this should be given to the improved capacity for diagnosis on the part of the general practitioner, and also to the doctrine of immediate operation for appendicitis. The actual fall in mortality since 1910 for all types of the disease is from 8 to 5 per cent. at St. Thomas's. Another factor, which has perhaps been overlooked, is the abolition of chloroform from operations on septic patients. I say this rather than the introduction of gas and oxygen anaesthesia, because I think that ether is still the anaesthetic most generally used, and when given by the open method it is most satisfactory for the surgeon, and almost anyone can administer it. It is true that cases of general peritonitis under treatment by starvation, the withholding of aperients, and the Fowler position, undergo resolution, or the infection may settle down to a localized abscess, but at present I think we have very few data which will guide us in the selection of such cases if we meet them for the first time with generalized peritoneal involvement.

If, as Mr. Love states, delayed treatment can only be carried out satisfactorily under hospital conditions, are we not in danger of reverting to the old state of affairs? For what the hospitals do to-day the general practitioner will do to-morrow. Let it be admitted that each case presents an individual clinical problem. Is it not so with every disease? But let it be recognized by the public that immediate operation yields the best results in appendicitis and the doctor's duty will be simplified. If we change this point of view the public will get the idea that appendicitis should be treated on medical and not surgical lines, and I think there is a very real danger of the mortality continuing to rise. Public opinion is first trained by the medical profession. Later the same public opinion tends to call the tune for medical treatment. As a proof of this I need only refer to the recent trial of a doctor who failed to take a throat swab in a case of diphtheria and objected to the use of antitoxin. He was prosecuted, not by his medical enemies, but by the Crown for manslaughter. The Crown prosecution was at the instigation of a coroner's jury. Such a power over us does public opinion acquire as the result of education by ourselves. For our peace of mind I think it was a blessing he was acquitted; but the fact that the trial took place shows how careful we must be in formulating rules for public guidance. Patients are less exiguous than before the war in demanding the immediate attention of their doctors. Perhaps they are more prone to treat their abdominal pains before summoning assistance. I hope this does not mean that the precious surgical opportunity afforded by the first twenty-four hours of an attack of appendicitis is often allowed to slip. As long as the ownership of children is vested in the parents I am afraid mothers will continue to misuse aperients, and I am heartily in agreement with Mr. Love when he writes that delayed treatment is hardly to be recommended in the case of young children. Nearly every surgeon, I think, has had bitter experience in this connexion. I would add also that at the other extreme of life, in advanced age, watching and waiting have greater dangers.

It has been advised by some, particularly Sherren, as long ago as 1905,[4] that when cases are seen after the first thirty-six hours of the disease—that is, when the infection is likely to have spread beyond the appendix itself—the tendency should always be towards a policy of delay. Nevertheless he admitted then, and other surgeons have admitted since, that we may regret leaving a case, but we are not likely to regret operating when there is a doubt as to the chance of temporary improvement.

Sherren based his doctrine on the state of cutaneous tenderness present. If superficial tenderness is present in the "appendix triangle," bounded below by Poupart's ligament, above by a line drawn out from the umbilicus, and to the inner side by a vertical line just to the right of the mid-line, it usually means that the appendix is distended and intact. In cases that are subsiding the area becomes smaller and smaller. Disappearance of tenderness without signs of improvement of the patient means serious mischief in the appendix. This latter is a call for immediate operation irrespective of the disease. The presence of cutaneous hyperaesthesia, however, is not a proof of safety, since the infection may spread outside the appendix without leading to any loss of tension within its lumen.

The important discussion, I think, centres around the proper treatment of those cases which I have included in the second clinical type. The disease is no longer limited to the appendix, but as far as the clinical signs are capable of interpretation the name of general peritonitis is not justified. There may be an inflammatory mass, there may be a visible tumour in the right iliac fossa, there may be pus in the pelvis. The day of the disease may be anything from the third to the fourteenth. Cutaneous hyperaesthesia may be present, though usually it has disappeared. What is the proper treatment, viewed in the light of our knowledge of the mortality statistics? Love says that if you practise the delayed operation and choose your cases aright you may expect a mortality as low as 2.1 per cent. If, however, you plan your operation in the future and are compelled to do it in the present, the mortality in unsuccessfully delayed cases will be 6.4 per cent. If you perform immediate operation on cases with local peritonitis or local abscess, the mortality you may expect is 5.52 per cent. He puts together the first two figures and gets the more favourable result of 3.5 per cent. mortality for all cases treated on delayed lines, but I suggest that this includes a large proportion of cases where the condition is obviously subsiding. I do not feel disposed to quarrel with these figures, but I would suggest that it is still good surgery to drain local abscesses rather than to trust to Nature to absorb or discharge the pus.

With regard to the absorption of pus in the peritoneal cavity, I think a note of caution must be sounded. It is true that it can be absorbed, and actual pus may thus disappear, and in due time render the operation of appendicectomy easy; but is it certain that the patient may not suffer in the process? A recent unpleasant experience makes me hesitate to subscribe to this as an ideal process. A previously healthy man was admitted to a medical ward with what was diagnosed as an appendix abscess. His fever lasted only a few days, and in about a fortnight the mass had subsided. He convalesced satisfactorily, and was discharged from the medical ward with instructions to return on the surgical side for appendicectomy. This he did, and the operation was done without any undue difficulty, no pus being encountered. All went well until the tenth or twelfth day, when his heart suddenly began to fail and he died within twenty-four hours. All that the *post-mortem* examination revealed was a fatty and degenerate heart muscle. Personally I am inclined to

attribute this to the toxins absorbed from his abscess. It is one thing for the peritoneum to absorb pus; it is quite another matter for the system to absorb toxins. Relief of tension is the best method of prevention, and I believe that this unfortunate event would not have occurred if the abscess in the first instance had been surgically drained.

In doubtful cases, where the presence of pus is uncertain but there is an inflammatory mass, there is much to be said for the operation of coeliostomy. Drainage, preferably with corrugated rubber, may with advantage be made down to the appendicular lump, and discharge, or resolution, hastened in this way. Immediate operation should not always mean immediate appendicectomy, but rather the relief of intraperitoneal tension. If there is scope for this the general principle for the urgency of surgery is unaltered, and I do not think that the watching and waiting policy is likely to be revived in the case of general peritonitis, except in those cases where the condition of the patient does not appear to warrant any operation. Anything short of appendicectomy here appears to be rarely successful, and if the patient will not stand this by all means give Nature a chance to localize the infection.

In conclusion I would suggest that the treatment of acute appendicitis should now be standardized on the following lines irrespective of the length of the illness:

> For acute appendicitis limited to the appendix, appendicectomy without drainage.
>
> For appendicitis with general peritonitis, appendicectomy with cleansing of the peritoneum and perhaps temporary drainage.
>
> For appendicitis with local peritonitis, relief of tension with subsequent appendicectomy.

The last suggestion is not intended to imply immediate operation in all cases, and treatment by physiological rest and the application of heat may be as successful in the treatment of acute inflammation in the right iliac fossa as in other parts of the body.

Treatment which is based on success gradually becomes standardized by the profession and recognized by the public. Experiment gradually gives place to routine, and it is our business to see that our practices are based on sound principles. Immutability is not to be expected in human affairs, but pathological laws do not change greatly, and to lower the mortality of a disease we must either prevent it, or fashion our cure to meet the disease when its victim will best respond to the treatment.

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An Address ON APPENDICITIS.

DELIVERED AT THE NORTH-EAST LONDON POST-GRADUATE COLLEGE ON FEBRUARY 16TH, 1925,

BY

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DURING the year 1923, according to the Registrar-General's statistics, there were 2,826 deaths (1,608 male and 1,218 female) registered as due to appendicitis in England and Wales. There has been a little fluctuation in the death rate from year to year, but this was the largest number of deaths yet recorded; in 1913 it was 2,529 (1,387 male, 1,142 female). These figures cannot be considered exact, as cases of resulting intestinal obstruction, peritonitis, or other direct complications are not necessarily included, but they do give us an approximate idea. When we consider that the majority of cases of acute appendicitis occur in the young it is a serious figure, and in itself would be sufficient excuse for venturing to take up your time by speaking to you on a subject about which you might think there was nothing more to be said.

The damage done, however, is by no means limited to this loss of life. Among those that recover, in many there has been an enormous waste of working time and much suffering that could have been prevented if the condition was surgically treated while it was still appendicitis. In the hospital to which I am attached we still get these cases too late—for example, in the twelve months preceding September 30th last 102 cases of acute appendicitis (57 male and 45 female) were admitted to my firm's beds at the London Hospital; of these only 27 were within the first twenty-four hours of the attack—the most favourable time for operation—and these were almost the only cases which could be treated as uncomplicated appendicitis. We should have advanced far from the day when it was stated, "The disease is essentially a variety of peritonitis; its manifestations, its effects, and its possibilities are those only of peritonitis. Whatever be the antecedent condition, an attack of appendicitis is not in evidence, and, indeed, does not exist until the peritoneum is implicated."[1] We should now say that the disease has ceased to be simply appendicitis when this has happened, and that cure is no longer certain by simple removal of the appendix.

I wish specially to direct attention to the symptoms, particularly, but not entirely, in so-called chronic appendicitis. I say advisedly, as I have repeatedly said before, pain starting in and confined to the right iliac fossa is not *the* symptom of appendicitis. This conception of the symptoms dates, I feel sure, from the time when much of our knowledge was based on swellings in the right iliac fossa; the disease was called perityphlitis, of which inflammation of the appendix was not the only cause. No surgeon saw the case while it was still appendicitis; he was not called in until pus was diagnosed and the pain had become right-sided. That is, however, ancient history, and yet the number of individuals with right-sided pain who are admitted to hospital as acute or chronic appendicitis, or are seen after the appendix has been removed, without relief, shows no diminution. It is for these reasons—delay in submitting cases to operation and want of appreciation of the exact symptoms—that I consider there is still need for education in the matter of diagnosis and treatment.

Sometimes the delay in operating on acute cases is on the part of the public, who think, excusably, that as the appendix is on the right side, pain produced by its inflammation must be right-sided also. But in the majority of cases the patient has seen a medical man, and here there should now be no excuse for delay in recognizing the condition because the pain is general; on the other hand, cases of right-sided pain are still sent into my beds at hospital by medical officers of that institution as appendicitis.

There is now no sufficient reason for considering the symptoms of appendicitis to consist of pain in the right iliac fossa. Even the early writers on acute appendicitis in this country correctly realized its symptoms and mentioned the general nature of the pain, although they did not lay sufficient stress on it or always act on that knowledge. Treves spoke of it, but in the greater part of his writings this was not insisted upon, and in his last contribution[2] these words occur: "Removal of the appendix is also to be recommended in chronic appendicitis, in those examples in which there are no active attacks but in which there is abiding discomfort in the right iliac fossa with exacerbations of uneasiness." These, of course, are the cases in which appendicectomy is unlikely to bring relief. Tubby,[3] in his excellent little monograph, published twenty-five years ago, was one of the first to direct sufficient attention to it, and writes: "A sudden and severe pain in the abdomen is in nearly every case the first symptom. Its situation is, during the first twenty-four to thirty-six hours, all over the abdomen." Lockwood[4] also drew attention to it. Battle and Corner[5] are perfectly clear on this matter. In a paper read at the Medical Society in 1907 by Sir Holburt Waring[6] on "Some surgical affections of the right iliac fossa which simulate appendicitis," he wisely prefaced his illustrative cases with this observation: "I shall also restrict my remarks to those cases in which the cardinal clinical symptoms of an attack of acute or subacute appendicitis have been manifested—by these I understand abdominal pain commencing usually in the umbilical or epigastric region." In the most widely read student's textbook of surgery (Rose and Carless) the symptoms are correctly given, as they are in

the admirable article on the subject in the new edition of Choyce's *System of Surgery*.

Early in my dealing with this disease I recognized that pain confined to the right iliac fossa was not a symptom of appendicitis, acute or chronic. The first case that brought this home to me was in 1905, when I operated on a girl of 18 with pain in the right iliac fossa of three days' duration, in whom careful examination of chest and urine had failed to elicit any abnormality. Operation revealed a normal appendix, and the pain recurred as before. It was not long before I was convinced of the failure of appendicectomy to cure cases of right-sided pain in so-called chronic appendicitis; the results demonstrated the incorrectness of the diagnosis. I have taught for at least fifteen years that right-sided pain is not evidence of appendicitis, and I have published these remarks in several papers. It seems obvious from what I have quoted that the teaching in the hospitals of London must be on correct lines, as I have mentioned teachers at most of them. In spite of this, however, it seems difficult to get the correct symptoms realized; the idea is still fixed among many that appendicitis is *the* cause of right-sided pain. It may be the mental effect of the situation of the appendix, allowing the pain to fit its anatomical position, but it is most likely due to want of sufficient accuracy in teaching and writing, and also lack of differentiation between pain and tenderness.

In acute appendicitis the pain in the first instance is generalized, it is diffuse, usually umbilical or epigastric, and only later, when there is peritonitis or local peritoneal irritation, is the pain in the right iliac fossa. In a first attack of acute appendicitis the pain never starts in the right side. Appendicitis should be the last, not the first, disease to think of in a patient with pain starting in the right side of the abdomen. It is conceivable that if the appendix is buried in adhesions as the result of a previous acute attack the pain may commence locally. In a considerable experience of this condition I have known this to happen twice only. When we come to consider the cause of the symptoms, the overdistension of the appendix or irritation of its wall, it is obvious why the pain is generalized. The nerve supply is from the abdominal sympathetic, and it is not until there is irritation of parietal peritoneum or structures beneath it that the pain is local. The march of the symptoms is always the same—pain first; it never starts with vomiting, diarrhoea, or a rise of temperature. We are all familiar with attacks of pain in the right side of the abdomen accompanied by vomiting, sometimes by a slight rise of temperature, and more common in women. These are never appendicular in origin, but all need careful investigation, and at present in many of them the most we can say is that they are associated with ptosis. There are, however, more serious causes of acute right-sided abdominal pain, which may necessitate immediate or remote surgical treatment. I would mention leakage from a chronic duodenal ulcer, carcinoma of the pelvic colon, or any part distal to the caecum, tubal diseases, twisted ovarian tumours, renal conditions, and last, but not least, thoracic diseases. The last we should always bear in mind, as it still causes difficulties in diagnosis, and cases of pneumonia are yet often admitted into the surgical beds of a hospital. In some cases an attack of right-sided pain is due to a lymphadenitis of the group of glands in the ileo-caecal region, usually tuberculous in nature. The following is an excellent example:

A nurse was sent into the sick-room with a provisional diagnosis of appendicitis. She had been seized with pain in the right side of the abdomen six days before; it doubled her up and made her vomit. Her temperature was 99°, her pulse 100. The pain was entirely right-sided. Her temperature and her pulse rate remained the same, but her pain increased in severity and there was marked tenderness and slight rigidity in the right iliac fossa. Eleven months previously I had operated on her for tuberculous glands of the neck, and diagnosed a similar condition in the ileo-caecal region. As her condition was getting worse I operated on March 7th, 1924, three days after admission, and found a mass of caseating glands extending upwards from the ileo-caecal angle. I evacuated the mass and closed the abdomen; the pain was at once relieved; she went out a month later, and remains well. The appendix was normal to naked eye and microscopic examination.

Right-sided renal conditions should never be mistaken for appendicitis; the pain is never general, and the symptoms of the two are entirely different, yet such mistakes are by no means infrequently made. I will give a typical example:

A girl of 18 was sent to see me by her medical man because she had had no relief from appendicectomy. I obtained the following history: for years she had had attacks of pain in the right side, which she described as very bad, and which often made her vomit. Six weeks previously the appendix had been removed during an acute attack, and shortly after leaving hospital she had had further symptoms. On abdominal examination I discovered a definite renal tumour, which proved at operation to be a hydronephrosis.

An attack of right renal colic due to a calculus in the ureter is by no means infrequently diagnosed as acute appendicitis. It has been reported by R. F. O'Neill[7] that 25 per cent. of the patients in the Massachusetts General Hospital who had operations for ureteral calculi had had a previous operation for appendicitis or some other supposed intra-abdominal lesion without relief.

What, then, are the symptoms of acute appendicitis? There is the onset, usually sudden, of general abdominal pain, often waking the patient from sleep in the early hours of the morning. There may be no rise of pulse rate, and a high temperature is uncommon; it may be normal, but within twelve hours is usually from 99° to 100°. There is at first superficial tenderness, and deep tenderness is present in the right iliac fossa, beneath the liver, or per rectum, according to the position of the appendix, but the initial pain, as felt by the patient, is the same and the superficial tenderness remains the same. The symptoms are perfectly clear—general pain, local tenderness. We can probably all recall cases of this nature in which it was supposed that the patient had eaten something that disagreed or had "ptomaine poisoning," the disease not diagnosed until a swelling in the right iliac fossa made its appearance, or in the former cases matters were precipitated by an aperient. It is a common idea among patients to attribute all pains to some external influence, such as food taken, or to some half-forgotten injury, rather than to definite abdominal disease.

Symptoms such as I have described call for immediate operation. No aperient should be given, nothing but water by the mouth and morphine, if necessary, *after* the diagnosis has been made. Early removal when the inflammation is confined to the appendix would not only abolish the death rate from appendicitis, but would restore the patient to health and work in a very short time—eight or nine days in bed, and work resumed in four weeks.

Look at the other side of the picture: the patient is seen on the third day with obvious peritonitis; whatever treatment is then adopted—and I shall discuss this later—if recovery takes place it will be after a long illness, resulting in the loss, perhaps, of months of work or education. Or, again, the patient comes under observation on the sixth or seventh day with a localized mass; if operation is performed at once or delayed, much time is lost, and even if the patient returns to work within two months it is usually with a weakened abdominal wall, the result of drainage. There are also the risks of infection of other abdominal organs, the chest, and also intestinal obstruction.

In all that I have to say about the management of the later cases of acute appendicitis I want this to be borne in mind—there is only one treatment, and that is appendicectomy; the question to be discussed is at what time it is safest and best to operate. There is no exception to the rule that in acute appendicitis the appendix should always be removed while the disease is still confined to it; this is usually within the first twenty-four hours; occasionally we may be able to do it later. But if the patient has been seen medically there is no need for even this delay; most could be removed within the first twelve hours, and the earlier the better. Drainage is then unnecessary, and work is resumed within a very short time. When the patient is seen later, either with diffuse peritonitis or with a localized swelling, I am of the opinion, as I have been for many years, that the death rate is less, the disability time shorter, the complications fewer, and the abdominal wall stronger if operation is delayed. In the first paper that I published on the treatment of acute appendicitis, in 1905,[8] I wrote of these patients that they should be tided over the attack if

possible and the appendix removed later. This has been the rule in my wards at the London Hospital, and nearly twenty years' experience has only served to strengthen the opinion that this is the best treatment. Love[9] has written two papers on this subject based on a review of over 2,000 cases at the London Hospital under the care of all the surgeons. He found that the mortality in 221 cases operated on within twenty-four hours was 0.9 per cent. Excluding these, of cases which were treated by immediate operation at all stages after the first twenty-four hours the mortality was 5.8 per cent.; of those treated on delayed lines 3.5 per cent. He stated also that complications are three times as common in those late cases operated on immediately. I consider that these two papers are sufficient justification for the line of treatment I have advocated and adopted at the London Hospital since I first began to operate. The only change I have made has been to greater conservatism and more patience in dealing with cases of appendix abscess.

My routine is as follows: If there is reason to suppose the disease is still confined to the appendix, immediate operation; if it is not, the patient is put in the Fowler position, as much water allowed by mouth as is needed, unless there is vomiting, when continuous saline is given by the rectum and the stomach washed out; no aperient or enema is allowed. Morphine is administered subcutaneously if necessary, and a four-hour chart of pulse and temperature is kept. As a rule, within twenty-four hours the condition improves and the temperature begins to fall. I do not allow anything beyond water till the pulse and temperature have settled for twenty-four hours; an enema is given at about the same time. Too early feeding sends the temperature up at once. I have often kept the patient for six or seven days on water in this way. I have been astonished at the way in which large swellings gradually disappear under this treatment. If there is no improvement, the simplest operation is done—drainage; no attempt is made to search for the appendix; it is removed if it presents itself. When an abscess needs opening it should be through a small incision where it is pointing; if it can be felt per rectum it should be left until there is obvious fluctuation and opened by this route and a tube inserted. This can usually be removed in forty-eight hours. When abscesses have been drained or when swellings have taken considerable time to disappear, the patient is sent out and returns in three months for appendicectomy. It is astonishing how few adhesions are present and how usual it is for the appendix to show no sign of perforation, even when, from the escape of a concretion, one knows it has perforated.

The more experience I have of this method, and the more thoroughly it is carried out, the more I am pleased with it. I am convinced it shortens convalescence; the death rate is much less and there is an absence of complications such as intestinal obstruction, residual abscesses, and ventral herniae. But it requires skilful nursing and confidence on the part of the patient and friends. There must be no weakening on the subject of "food to keep up the patient's strength."

Before leaving the subject of acute appendicitis I should like to say a word on the increase of the disease and also on the change in sex incidence. The increase in the number of cases was remarkable between the years 1895 and 1905; this has been shown from the Bristol records by Rendle Short,[10] as well as by myself. The increase has been little since then, although the disease is certainly not on the decline. There has, however, been a remarkable change in the sex incidence. In 1903 I found, in the London Hospital cases, it was 2.5 times as common in the male sex; in the same year Grey Turner[11] found it about the same. In 1907 among 311 cases at the London Hospital there were 65 per cent. males; in 1922, among 625 cases, there were only 55 per cent. males. In my own acute cases at hospital in a year before September 30th, the percentage was about the same. This change in sex incidence has also been noted by Rendle Short.

Let us now pass to chronic appendicitis. In spite of all that has been said such a condition does exist, but it is not characterized by pain in the "appendix" region. I hold very strongly that a patient with pain confined to the right iliac fossa with tenderness is not suffering from chronic appendicitis, and removal of the appendix is unjustifiable. It is because of its failure to relieve pain here that many have become sceptical of its existence. In America, where operations for "chronic appendicitis" were much more common even than in this country, many writers have drawn attention to the failure of appendicectomy to cure. A recent paper had as its title "Chronic appendicitis—is it a myth?"[12] and a dictum of a physician is quoted which runs: "There are two kinds of appendicitis—acute appendicitis and appendicitis for revenue only." Connell,[13] in a paper on pseudo-appendicitis, records failure to cure in 48 out of 212 patients operated on by himself, and draws attention to the fact that "After eliminating all demonstrable pathologic conditions that might possibly be confused with 'chronic appendicitis,' there remains, in certain cases, some cause for pain in the right iliac fossa, other than the appendix, the exact cause of which is as yet not definitely known."

Stanton,[14] in 1911, wrote as follows: "In our cured cases of chronic appendicitis the pain has been almost constantly referred to as epigastric or mid-abdominal rather than right inguinal. On the other hand, nearly all the patients not benefited by operation complained of right inguinal pain as one of their chief symptoms. . . . Our uncured patients almost without exception complained of pain in the right lower quadrant as their chief symptom." Chalfant[15] stated that "the results of operation for chronic appendicitis are among the poorest in surgery."

In the discussion on the subsequent course and later history of appendicitis after operation, at the Medico-Chirurgical Society in 1905, Treves,[16] who opened it, gave details of cases of failure to relieve. After eliminating such causes as incomplete removal of the appendix and persistent sinus, there were seven cases of persistent pain in the right iliac fossa, two of mobile kidney, and one renal calculus, all obviously cases operated on for right-sided pain.

In 1913 I wrote as follows:[17] "I first wish to direct your attention to pain in appendicitis—in the initial stage of the acute attack; it is generalized, and later shifts to the right iliac fossa. In chronic appendicitis I have been in the habit of teaching that pain is not in the right iliac fossa, and, if here, its principal seat is elsewhere. Less would be heard of failure to relieve symptoms by the removal of the appendix if we were sceptical of the sole appendicular origin of pain which is *limited* to the right iliac fossa."

When cases of pain in the right iliac fossa are excluded, there remain two definite groups in which chronic abdominal symptoms are certainly due to disease of the appendix. It may show itself first by attacks of pain in the abdomen, generalized or in the epigastric or umbilical region, severe but of short duration; and secondly, by dyspeptic symptoms, sometimes accompanied by haematemesis and occasionally by colicky pains and irregularity of the bowels. Removal of the appendix, as I have known it advised, to cure headaches or pains in the joints seems to me unjustifiable unless we have definite evidence from abdominal symptoms that the appendix is diseased.

I am beginning to doubt if it is ever justifiable to operate for what is supposed to be chronic appendicitis through a small incision. Certainly in cases in the second group, in which dyspepsia is diagnosed as being due to appendicular disease, it is never so—the whole abdomen must be explored. I have had to operate on numerous patients with gastric ulcer, duodenal ulcer, and gall-bladder disease in whom the appendix had previously been removed through a small incision in the right iliac fossa on the diagnosis of appendix dyspepsia. I will give examples of both types of disease.

I operated recently on a patient with the following history: A man, aged 32, was transferred to my care at the London Hospital by Dr. Robert Hutchison. He had not been in good digestive health for nine months following a severe attack of epigastric pain which lasted about an hour. Since then he had suffered from flatulence, and had had seven or eight attacks of upper abdominal pain, each lasting about seven hours. He was a stout man with no tenderness in the abdomen. A test meal showed lowered acidity. I explored the whole abdomen on January 23rd, 1925. The gall bladder on external examination

was normal, and there were no enlarged glands. I opened it; the mucous membrane was normal, and bacteriological examination of the bile showed it to be sterile. The stomach and duodenum were normal. The appendix was enlarged to the size of my index finger, and was adherent at its base. On cutting into it its walls were thickened; it was strictured at its base and contained muco-pus.

This is typical of the first group, and the diagnosis can only be made certainly if there is definite tenderness in the right iliac fossa during an attack. To show how necessary general exploration may be I will give you another example.

In 1919 I was asked to see a lady with a view to removing her appendix for dyspepsia. The following was the history given me: a year previously she had waked in the middle of the night with abdominal pain, diagnosed as acute appendicitis. She was kept in bed fourteen days. Since then she had had much nausea and occasional abdominal discomfort, both waking her and keeping her awake, and three months previously a milder attack of nocturnal pain. The report after a barium meal was that she had visceroptosis. Acting on the rule I have laid down, that although you may diagnose appendix dyspepsia you should never act on it—that is, never be content with removing the appendix alone—I found an atrophied adherent appendix, which I removed. On exploring the upper abdomen the cause for her abdominal pain became evident—there was cholecystitis with gall stones.

In chronic appendicitis causing dyspepsia the pain is not right-sided, although during an attack there may be tenderness in the right iliac fossa, and pressure here causes epigastric discomfort. But I wish to press home the fact that in these cases thorough examination of the whole abdomen is necessary at operation; only then can a certain diagnosis of appendix dyspepsia be made.

The object of choosing this subject has been to draw attention to the necessity of early operation in cases of acute appendicitis and to the care necessary in their diagnosis; and secondly, to warn you against too readily diagnosing chronic appendicitis—it is a disease that does exist and cause symptoms, but is not nearly as common as is often supposed.

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AN ANOXAEMIC TYPE OF INFANTILE ATROPHY.

BY

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THE term "atrophy" is used to describe a condition in infants which is characterized by an obstinate refusal to gain weight and thrive, in spite of dietetic or medicinal treatment, and in whom no cause can be found to account for this failure to grow. Atrophy is seldom associated with dyspepsia. If this is present at all it is very slight, quite insufficient to account for the infant's lack of progress, and quite possibly a result, rather than a cause, of the condition. In a few cases, however, there may be a history of previous dyspepsia, following which the atrophic state becomes evident; such cases may be classified as dyspeptic atrophies and may or may not respond to dietetic treatment. Again, atrophy may be due to endocrine or vitamin deficiency, and this type responds to the appropriate treatment. There is still, however, a form of atrophy which fails to respond to dietetic, endocrine, or vitamin treatment, and it is with cases of this kind that this preliminary note is concerned.

It is a common experience that at necropsies on cases of infantile atrophy little or no organic change is revealed which throws any light on the causation of the disease. This in itself might suggest that some physiological factor, other than those mentioned above, is at fault. The idea that these particular cases are due to the disorder of some fundamental physiological function led to the consideration of the possibility of anoxaemia, either general, due to some deficiency in the functioning of the lungs, or local, due possibly to capillary stasis in the intestine as a result of initial digestive disturbances of either a mild or severe type. Regarding the former, it is well known that failure to saturate the blood in the lungs with oxygen, or deficient saturation brought about by other means, can profoundly affect the physiological condition of an animal. The subject has been fully dealt with by Haldane[1] and need not be elaborated here. That cyanosis and anoxaemia may occur in premature infants has been recorded by Bakwin,[2] who has described the results of treatment of two such cases with oxygen. About the occurrence of local want of oxygen in a tissue or organ, however, we have few or no data. It is true that this must play a part in certain well recognized pathological states—for example, in the liver and kidney in cases of mitral stenosis and in other conditions of circulatory failure, either local or general. Whether simple capillary stasis can occur in a single organ due to localized abnormal conditions and thus be a cause of local anoxaemia is, however, not so certain. It may be remembered that surgical shock is generally believed to be associated with widespread capillary stasis. The phenomena of shock can also be closely simulated in animals under anaesthesia by injection of histamine, which is a product capable of production by tissue breakdown. It does not appear inconceivable therefore that, under certain conditions, dysfunction of a tissue may be brought about locally through the action of toxic substances produced by bacterial action and that this may have, as a concomitant, local anoxaemia due to failure of the capillary circulation.

These were the underlying ideas that prompted us to try the effect of oxygen administration in certain cases of infantile atrophy. The cases are not as a rule cyanosed, but a slight degree of this condition may sometimes be observed. It seemed that a direct answer to the question whether a generalized anoxaemia was present would be best obtained by determining the results of oxygen therapy. On the other hand, oxygen therapy in localized anoxaemia due to capillary stasis would only act by increasing the dissolved oxygen of the blood, and this might be expected to yield good results only if continued for a considerable length of time and if the local anoxaemia were not severe.

The results we have obtained have so far been promising, and although the work is by no means completed it seems worth while placing them on record at this stage of the inquiry, which promises to be a long one. The preliminary experiments were carried out by two of us at the Leeds General Infirmary, through the kindness of Dr. C. W. Vining, but the greater part of the work has been done at the Manchester Babies' Hospital. For the facilities accorded to us there we are very greatly indebted to Dr. Catherine Chisholm. The cases chosen for oxygen treatment have been those which, after a period of dietetic treatment, have shown themselves to be refractory, as judged by failure to gain weight. In these cases digestive disturbances are never a marked feature, although they may occur, and are then of a mild type. When failure to gain in weight was established and the child was still on a diet to which it had not responded, the oxygen treatment was commenced. Thereafter the composition of the diet was not changed, but increased amounts of food were given as necessitated by the increase in weight and appetite of the child. The oxygen treatment was carried out in the small closed cot which was exhibited by us to the Physiological Society two years ago.

It consists essentially of an air-tight box (29 in. by 18 in. by 20 in.) with a glass lid and apertures for admitting oxygen at a known rate and for sampling the air within it. The infant is placed inside on a hammock. A small fan inside serves for mixing the contained air and providing for its movement. No arrangements are made for removing the carbon dioxide which accumulates while the infant is in the cot. In a two-hour period the carbon dioxide content of the air rises to between 2 and 3 per cent., depending on the size of the child and the amount of movement it makes. The oxygen is admitted from a cylinder provided with reducing valve *and pressure gauge*, and passes through a modified Pitot's tube, whereby, after a preliminary standardization, the rate of flow can be determined. After placing the child in the cot, the

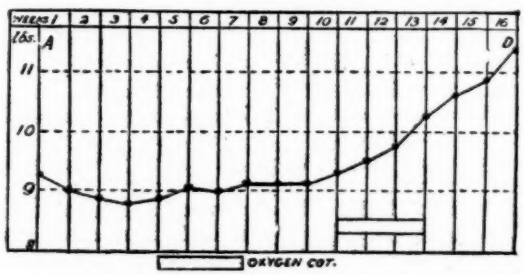
glass lid is clamped on, the fan started, and oxygen rapidly admitted in sufficient amount to produce an atmosphere in the cot containing about 45 per cent. of oxygen. When this is attained (in four to six minutes) the flow is diminished to that amount which is necessary to maintain the oxygen concentration at about the same level. The infant is kept in the cot for two to two and a half hours and then removed for feeding, etc. It is then replaced in the cot, the air again enriched with oxygen, and so on for a further period of two to two and a half hours.

This treatment has been carried out during the day only. At the commencement the period of treatment with oxygen is limited to two hours on the first day, four on the second, and is increased to a maximum of about eight hours by the fourth day. The length of time during which it has been carried out has varied between two and three weeks. Except for one case which died within two days, and in which treatment was only instituted when the child was almost moribund and had lost weight rapidly, most of the infants treated have responded with a notable gain in weight, which has been continued after the treatment was stopped. Since the treatment has been continued over a period of two or three weeks it was necessary to rule out the factor of coincidence, because atrophic infants may occasionally begin to gain weight for no apparent reason. We have now treated 16 cases, of which 13 have shown a satisfactory gain in weight within a week from the beginning of the oxygen administration, and in our opinion this cannot be accounted for as a mere coincidence, but is due to the treatment.

It is possible that the mere increase of carbon dioxide in the air in the cot might be responsible for the good results obtained. A number of cases have therefore been treated in a similar cot in which the oxygen content was kept at the usual atmospheric level, but the carbon dioxide was allowed to accumulate. Of 5 cases thus treated, 4 began to gain weight slightly, whereas 1 remained stationary. The gain in weight was not so marked as that obtained in other cases treated in the oxygen-enriched air. All these 5 cases subsequently gained weight, but at a much more rapid rate when treatment with oxygen-enriched air was instituted. The following brief data with weight charts illustrate the kind of result obtained in successful cases.

CASE I.

A male infant was admitted to hospital at the age of 2 months with a history of loss of weight and some dyspepsia: he was pale and thin but not wasted, and nothing abnormal was detected on examination. During nine weeks in hospital the infant's weight remained obstinately stationary in spite of various changes in diet; throughout this period his appetite was poor, but dyspeptic symptoms were slight; vitamin and glandular extracts produced no beneficial results.

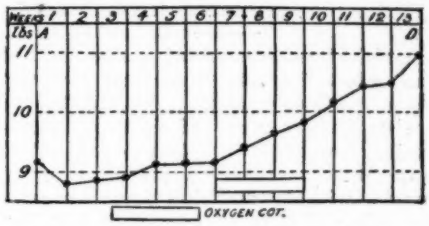


CASE I.—Weight Chart. Feeds: Week 1—simple milk and water; week 2—Bengerized milk and water; weeks 3 to 6—lactified milk and water; weeks 6 to 15—Bengerized milk and water; week 16—simple milk and water. A, admission; D, discharge.

Ultimately the infant was placed in the oxygen cot for three weeks, the diet remaining the same in type as during the three previous weeks. While in the cot he gained 1 lb. in weight and another pound was added during the ensuing three weeks before discharge. The child's appetite commenced to improve after the initiation of the cot treatment; the colour also improved and the muscular tone became much more firm.

CASE II.

A male infant, aged 2 months, was admitted with a history of failure to gain weight and of some previous mild dyspepsia; the type of food had been altered two or three times without producing any good results. On admission the infant was pale, with flabby muscles, but on the whole development was quite good. No abnormalities in the organs were present. The weight after six weeks was the same as on admission, though the appetite had been fair and no dyspeptic symptoms had been present. During

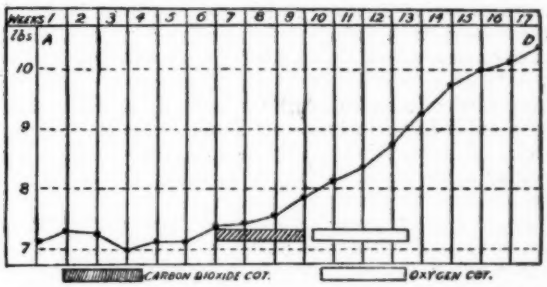


CASE II.—Weight Chart. Feeds: Week 1 to discharge—simple milk and water. A, admission; D, discharge.

twenty-three days in the oxygen cot, on the same form of diet, 12 oz. of weight were gained, and a further 17 oz. in the interval between the termination of the cot treatment and discharge. Muscular tone and general condition had also improved markedly since the commencement of the oxygen treatment.

CASE III.

A male infant, aged 1 month, was admitted with an indefinite history of failure to thrive in spite of partial breast-feeding. He was, on admission, a small, pale, and slightly wasted infant, with a spotty skin; the Wassermann reaction was negative. The child was tried on various kinds of food, and for a time even received some breast-milk feeds; he took feeds well, with only one slight initial attack of dyspepsia, but he completely failed to put on weight, and after six weeks in hospital only weighed 1 oz. more than on admission. With no alteration of diet, the infant was then placed for three weeks in the carbon dioxide cot (in which the carbon



CASE III.—Weight Chart. Feeds: Week 1—simple milk and water; weeks 2 to 4—Bengerized milk and water; weeks 4 to 16—lactified milk and water; week 17—simple milk and water. A, admission; D, discharge.

dioxide was allowed to accumulate but the oxygen content was kept approximately equal to that of the atmosphere). During this period 7 oz. of weight were gained. After three days' interval he was transferred to the oxygen cot for three weeks, and in this cot 17 oz. were gained, and another 27 oz. before discharge six weeks later. Later on the child developed some septic areas on his scalp with subsequent glandular enlargement, and also some aural discharge. All these conditions, however, cleared up satisfactorily, and on discharge the infant's general condition had greatly improved.

Since the small increase in carbon dioxide in the air of the cot without any oxygen enrichment was beneficial, we are inclined to accept this as supporting the view that some degree of general anoxaemia was present in these cases and that this was the cause of their failure to thrive. The increased ventilation of the lungs which the greater amount of carbon dioxide produces would in any case be of benefit if anoxaemia were present, but one would expect a better result by enriching the air with oxygen as well. This has been our experience.

It is obvious that further data from a much larger series of cases will have to be collected before more can be said about the treatment than that placed on record here. The work is therefore being continued and extended.

We wish to express our thanks to the Medical Research Council for defraying a part of the expense of this work.

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A METHOD OF TREATING INFECTED ULCERS.

BY

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IN 1910 I published an account of a new method for the treatment of infected ulcers, based on principles which had not been previously applied to therapeutics. The ordinary antiseptic treatment of ulcers does not always yield satisfactory results, owing to the fact that even the strongest antiseptics, applied to an ulcer, only kill the surface bacteria, without reaching those at even a slight depth, these being destroyed eventually by the general bactericidal powers of the patient. This destruction is, in general, satisfactory, except in the case of tuberculous, syphilitic, and certain tropical ulcers; but the time taken is often very long, which is very trying to the patient and the physician. I therefore set out to find a means of attacking the bacteria with a sufficiently strong antiseptic, not only on the surface of an ulcer, but also in the subjacent tissues. I thought this might be effected by the use of two substances which would interact to form a third substance with antiseptic properties. Moreover, since elements in the nascent state have enhanced chemical affinities, and consequently greater bactericidal properties, I wished to make use of this fact in the new treatment.

For the first of these substances I have used sodium iodide, administered orally, one of the elements in which is the highly potent iodine. This salt is non-poisonous, and in medicinal doses is ordinarily without unpleasant results; it is very quickly absorbed into the blood and is so carried by the circulation to the ulcer. There it meets some second substance, applied locally, which can set free iodine from the compound salt. Such substances are not difficult to find, the chemical combination of iodine with sodium being loose. It is not only freed by chlorine and the hypochlorites (Dakin's and Carrel's solutions) but also by any strongly oxidizing substance such as ozone and hydrogen peroxide. I have tried all these substances, and I generally prefer the peroxide solution as being the handiest and always constant in composition.

Iodine, for long considered one of our very best antiseptics, acts under these conditions in the nascent state, thus increasing its already great bactericidal properties. I must also draw attention to a subordinate point that may in some cases be important. Hydrogen peroxide, when in acid solution, frees iodine more easily and to a greater extent than in a neutral solution, the sodium radicle entering into combination with the acid. I therefore now acidify the peroxide solution with a small quantity of an acid, it does not matter which; I generally use acetic acid, but employ boric acid in treatment in the mouth, thus avoiding injury to the teeth.

Practical Application of the Method.

In the case of an ulcer on the surface of the body or the limbs I give sodium iodide in an average dose of 15 grains two or three times a day. Larger doses may be given, 60 to 90 grains a day, the effect of the treatment then being greater; but this entails some risk of iodism. Immediately after the first dose of sodium iodide the local peroxide treatment begins. The ulcer is covered by a layer of cotton-wool, not too thick, which is kept continually soaked with the peroxide solution dropping from a dropping-phial every tenth or fifteenth minute, or even more frequently. The more thoroughly the wool is soaked with peroxide the greater is the effect obtained. The strength of the peroxide solution must be kept at 1 to 3 per cent., generally 1 to 1½ per cent., because stronger solutions often irritate the sound skin around the ulcer. An addition of 1/4 to 1/2 per cent. acetic acid will prove quite sufficient for acidifying.

Since the blood contains most sodium iodide about one to two hours after its administration, special attention should be devoted during that time to the thorough soaking of the ulcer with peroxide solution. After the last dose of sodium iodide has been given for the day the local treatment of the ulcer should be continued for at least three to four hours in order to make full use of the iodide which is still circulating in the blood and will be gradually excreted by the kidneys.

When the ulcer has invaded the deeper tissue layers, forming pockets, it is necessary to tampon the pockets loosely with gauze in order to bring the infected walls of the ulcer into intimate contact with the peroxide solution dripped on the gauze. Infected cavities in bones and joints are to be treated in the same manner. Fistulae, however, usually cannot be directly treated, it being difficult, or even impossible, to conduct the peroxide solution in sufficient quantity through the narrow ducts. It cannot be repeated too often or too strongly emphasized that the efficiency of the method depends upon there being an intimate and prolonged contact between fresh hydrogen peroxide and the infected surface to which sodium iodide is being carried through the blood vessels. A surgical operation will sometimes make a fistula suitable for this treatment.

For treating ulcerations in the nose the nasal cavity must be loosely plugged with gauze upon which the peroxide solution must be dripped as before indicated, care being taken that the patient's head is held back so as to enable the liquid to flow up into the nose. In treatment of affections in the mouth and throat the method of applying the peroxide solution must be changed. In the case of the mouth it is usually sufficient to rinse it frequently with peroxide at intervals of a quarter of an hour or less. For treating the throat a spray apparatus is necessary; different types are on the market, some being driven by compressed air. When hydrogen peroxide is being used for treatment of affections in the mouth and throat it must be remembered that it is not permissible to make the solution acid with the common acids, lest the teeth should be injured. The only acid suitable is boric acid, this being inoffensive to the teeth and quite effective in a 1 per cent. dilution.

The efficiency of this method of treatment is due to the antiseptic agent, iodine, being generated in the nascent state locally; it operates at a deeper level in the infected tissues than do other antiseptics, the iodine being generated not only on the surface but also at some depth under it. Nevertheless, we must presume that even this strong bactericide cannot itself kill all the microbes in an infected ulcer; to do this it must be aided by the bactericidal powers of the patient. These are always a very important factor in the healing of every local or general infectious disease. The method suggested is designed to help the body to conquer a local lesion, thus shortening the duration of the infection and accelerating its cure. In cases where the body cannot unaided overcome a local infection this procedure will supply an additional bactericidal auxiliary.

Conditions in which the Method has proved Successful.

The ulcerations in which the method has been employed may conveniently be divided into two groups—namely, common infected ulcers and tuberculous ulcers. In the former group may be included all ulcers appearing spontaneously, or after trauma, or infected by pyogenic organisms; in the latter all tuberculous and lupoid ulcerations. All ulcers belonging to the first group are generally treated successfully by the method, but since its application is less convenient than the usual methods of treatment it should be reserved for serious cases, in which these latter methods are less efficacious, such as phagedaenic chancre and infection in open joints and bones. The method has proved very valuable in treating infectious conditions and ulcerations in the mouth and pharynx, such as mercury stomatitis, pyorrhoea, gingivitis, and angina necrotica (Vincenti). It has an extensive application in dental surgery for treating pyorrhoea, but the gum must first be separated from the teeth to enable the peroxide solution to reach the actual infected spot.

The method has been frequently employed in treating tuberculous and lupoid ulcerations in the nose and throat, but with variable results. This is due partly to the histological structure of the tuberculous ulcer and partly to the mode of action of the method. Tuberculous tissue commonly extends deeply below the free surface of the

ulcer, superficial tuberculous infections being comparatively rare, and the extent of the remedial action is necessarily limited. It follows that only in the case of superficial tuberculous ulcers can a thorough and permanent cure be expected; with deeper infections no lasting cure is to be obtained. Superficial healing will often occur, but deeper down the tubercles continue to grow; sooner or later they will sprout through the cicatrix or beside it.

Laryngeal tuberculosis deserves special mention. I have treated a large number of cases by my method, and in many of them I have obtained a perfect and lasting cure; others, which remained unaffected, indicating the correctness of the two principles mentioned previously. Careful attention must be paid to the condition of the lungs. If these are too extensively diseased it is no use trying to cure a local tuberculous affection. Advanced and progressive lung tuberculosis, with its corollaries of anaemia and cachexia, forbids the application of the method, since the patients can barely tolerate it, and the body has lost its power of recuperation. The treatment of local tuberculosis may be summed up as follows. For tuberculous and lupoid ulcers a complete and lasting cure can be obtained if the infection has not penetrated too far into the tissues, but if the infection is deep, as is commonly the case, only a superficial healing, or none at all, is to be expected.

The Treatment of Tropical Ulcers.

It is well known that external ulcers are very numerous and difficult to cure in the tropics. Not only are there those ulcers which commonly occur in temperate climates and which, owing to unfavourable tropical conditions, progress unfavourably, but also there are ulcers which are indigenous. I believe that my method should be particularly useful in the treatment of these tropical ulcers, and, since the British Empire includes the most extensive tropical dominion in the world, I have ventured to submit my proposal to the BRITISH MEDICAL JOURNAL in the hope that it will thus reach those regions where it is likely to prove of most use.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TRACHEOTOMY TUBE WORN FOR OVER SIXTY YEARS.

I SAW recently, in consultation with Dr. Benson Goulding, a case that may be worth recording.

It was that of an old lady, aged 81, who when 10 years old got "scarlatina followed by croup," and was tracheotomized very urgently in her home by Mr. Hutton, of "railroad catheter" fame in this city. She still wears the tube. She quotes Mr. Hutton as saying that she was only the third case of tracheotomy in Dublin, the other two having been performed in the Richmond Hospital.

The operation was a high tracheotomy. The voice when she stops the tube is quite good and pleasing. The larynx appears normal in phonation, but the rima glottidis does not open from ankylosis of the arytenoids. She has been perfectly healthy since the operation except for some rheumatic arthritis, has never had bronchitis, and is mentally as active as the average individual of 40.

A noteworthy feature of her case is that she can never leave the tube out without putting in a substitute at once, for fear of choking, the fistula, in spite of its age, still preserving its tendency to close.

In her 20's she spent two winters in Canada, crossing Lake Ontario in the mail sleigh on her way home. She married at about 28 and has had seven children, five of whom are alive.

Dublin. ROBERT WOODS.

DIPHTHERIA IN OLD AGE.

DIPHTHERIA is essentially a disease of childhood, but cases may be met with in any age period, and, though relatively infrequent in old age, it is by no means as uncommon as the paucity of recorded cases would suggest. Fever hospital statistics understate the incidence, because, as one might expect, the tendency is for practitioners to treat aged patients in their own homes. In 1913 fourteen notifications relating to cases of diphtheria in patients of over 60 years of age were received in the metropolitan area, but only two of these cases were admitted to hospital. In the previous year nine such cases were notified, but none of them received hospital treatment. The following table is self-explanatory:

Cases of Diphtheria in the Fever Hospitals of the Metropolitan Asylums Board, 1895 to 1914.

Total number of cases (all age groups), 110,741.

	Males.	Females.	Total.
Aged 60 and upwards	15	21	36
Deaths	3	7	10

In early life diphtheria is slightly commoner and more fatal in the female sex. In old age both the incidence and mortality rate are much higher in females. With one exception all the cases I have been able to trace from the literature have referred to female patients. The following is an instance of diphtheria in a patient of advanced age.

A woman, aged 94, was admitted to the Grove Hospital in July, 1324. On admission an exudate covered both tonsils and there was slight bilateral cervical adenitis. The clinical diagnosis was confirmed bacteriologically, and she received 21,000 units of antitoxin. Five days after admission the throat was clean, and the subsequent course was uneventful. She had no paralytic sequelae, and except for a slight albuminuria there were no complications. She was discharged well after a stay of thirty-eight days in hospital.

In some of the recorded cases the exudate consisted of a small patch on a somewhat atrophic faucial mucous membrane. The false membrane showed little tendency to spread, and deliquescence was sluggish. Paralysis, noted in some of the cases, did not differ from the type observed in younger patients. The mortality must have been unfavourably influenced by the age of the patients and the consequent increased liability to intercurrent affections.

Laryngeal forms are very rare in old age, but their occasional occurrence has led Akesson to emphasize the importance of examining for the diphtheria bacillus in the laryngitis of elderly people. As J. D. Rolleston has pointed out, the prognosis in the laryngeal diphtheria of adults is grave on account of the likelihood of an extension of membrane to the bronchi and lungs. The laryngitis from which George Washington died, at the age of 67, was supposed by Bretonneau to have been diphtherial.

From the notes of a case recently reported by Muir it would appear that there is a possibility that some of the cases of rhinitis in the aged may have a diphtherial origin. The non-specific therapeutic value of horse serum is well recognized, and it is interesting to note that in the cases recorded by Birt and Keyes the administration of antitoxin was followed by the apparent cure of gout in one case and of a varicose ulcer in the other.

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A CASE OF CHOREA IN INFANCY.

THE absence from Dr. Mary Bertram's series (BRITISH MEDICAL JOURNAL, March 14th, p. 486) of any case of chorea under the age of 3 prompts me to record one seen by me some years ago, frequently mentioned to students, but not hitherto given more permanent record. The patient was a female infant, aged 1 year and 10 months. The choreic movements were of recent origin and moderate severity, and there was quite definite carditis with mitral systolic bruit conducted outwards. The child had also a very rachitic head which had been wrongly considered to be hydrocephalus, beaded ribs, and other evidences of rickets. Furthermore, there was a very neurotic family history, the father being a confirmed epileptic. The subsequent history of the case is unknown to me. The patient was also seen in consultation by my senior colleague on the staff of the Children's Infirmary, Dr. Peter Davidson, whose opinion coincided with mine that the case was undoubtedly one of rheumatic chorea.

Liverpool. HUBERT ARMSTRONG, M.D.

SPONTANEOUS RUPTURE OF THE HEART.

THE report of the following case had been written out before the publication of the paper on a similar case by Drs. Skeen and Rutherford Dow in the BRITISH MEDICAL JOURNAL of February 7th (p. 262). The cases have certain features in common. In neither was the heart enlarged, the accident did not take place during violent exertion, and in both there was marked arterio-sclerosis of the coronary vessels. In the case now reported the spontaneous rupture can also be attributed to "a diminished blood supply with consequent secondary degenerative changes in the heart muscles."

A man, aged 70, recently attended at Dr. Kahan's surgery and complained that during the previous night he had been seized with severe pain in the epigastric region. At the time of examination the pain was practically gone, and nothing abnormal was detected. Five days later he again called and stated that he was feeling much better. Three days afterwards he appeared at the surgery about 10.30 a.m. At 10.45 another patient offered to allow him to go into the consulting room before his turn, as he looked so bad. He, however, did not move. Dr. Kahan and I immediately examined him. We could not feel his pulse; the corneal reflex was practically absent; the breathing was slow and stertorous; and the cardiac sounds were not audible. In about ten minutes from the onset of the attack the respiration ceased and the man was dead.

Post-mortem Examination.—The body was well nourished, with a tendency to obesity. As a cerebral haemorrhage was suspected, the brain was examined first, but no sign of a haemorrhage was found; the membranes were thickened and somewhat adherent to the surface of the brain; the cerebral arteries were definitely thickened. On opening the chest the pericardium was seen to be well covered with fat. The pericardial sac, opened *in situ*, contained about 8 oz. of blood. The heart appeared of normal size. The valves were competent, but showed evidence of sclerosis. The cardiac musculature was flabby and apparently in a state of degeneration. Near the apex, and adjacent to the septum, on the internal surface of the anterior wall of the left ventricle, was a tear 3/4 in. long. On attempting to pass a probe through this rent it came through only at the lower end to the external surface of the heart. The muscle immediately surrounding the rupture was necrotic. The coronary arteries were sclerosed and their lumen narrowed. On the inner surface of the aorta there were numerous atheromatous plaques. The lungs were slightly emphysematous. The liver was enlarged and congested, and the gall bladder contained ten small gall stones. The spleen was congested. The kidneys were of average size, but their cortex was narrowed and contained two or three small cysts. Their capsules were somewhat adherent, and their surface showed only slight granulations. The stomach contained some semisolid pultaceous food. The other organs showed nothing abnormal.

The sudden attack of pain of which the man first complained may have been due to gall-stone colic, or may perhaps have been associated with the splitting of the endocardium and myocardium, and death resulted when the epicardium gave way.

Spontaneous rupture of the heart usually occurs during violent exertion; but this was not the case here, as the man was sitting quietly when the catastrophe happened.

The heart was not enlarged. It may perhaps be deduced from this that the tension in the arterial system was not greatly increased. Monro[1] writes:

"There is reason to believe that certain toxic agents, such as alcohol and lead, give rise to degenerative changes in the arteries through their direct influence, and without necessarily causing increase of tension. It is possible, too, that endogenous poisons resulting from perverted metabolism may have a similar effect."

Of course, the sclerosis of the coronaries, by interfering with the nutrition of the heart, would tend to its atrophy. This man was a compositor, but had done no work for several years. He was not a teetotaler. Though there was extensive cardio-vascular degeneration, the man apparently enjoyed good health till about one week before his death.

London, E.1. M. COHEN, M.B., Ch.B.Glas.

[1] *Manual of Medicine*, fourth edition, pp. 353-354.

TRAUMATIC INTUSSUSCEPTION.

JUDGING from the scantiness of the literature on the subject it is clear that the condition described in the following case must be rare.

A girl, aged 10 years, fell across a chair at school and hurt her abdomen. She fainted, but rapidly recovered, and returned home complaining of pain in the umbilical region. She vomited many times during the night and next morning. When seen twenty-two hours after the accident the temperature was subnormal; the pulse was about 100, very irregular, and rather thin. The tongue was dry and she was still vomiting (pure bile). The abdomen moved fairly well, but was tender all over the left side and slightly rigid, especially in the upper left segment. As it was feared that rupture of the intestine had occurred, immediate laparotomy was performed. A little free blood was found in the peritoneal cavity, and considerable extravasation was present in the layers of the great omentum and in the lesser sac, though not sufficient to form a swelling. Tracing up the ileum from the caecum an intussusception was found at the lower end of the jejunum, the upper portion entering the lower for about one and a half inches. A few feet higher up another "double intussusception" was found, both upper and lower segments entering the gut for about one inch and meeting in the middle of the tumour. In both lesions the gut was absolutely normal in appearance, calibre, and texture, and obviously no obstruction, either circulatory or intestinal, had arisen. Both lesions were undone with the greatest ease, leaving no trace of where they had occurred.

Obviously they were due to violent and irregular peristalsis following the trauma. Recovery was only slightly delayed by influenza.

D. A. MITCHELL, M.B.Lond.,
Midsomer Norton, Somerset. F.R.C.S.Ed.

LONG SURVIVAL WITH CANCER OF THE BREAST.

ALTHOUGH it has long been known that patients suffering from carcinoma of the breast may live for a long time, the following case may prove to be of interest.

Mrs. M. B., aged 78, first consulted me on January 1st, 1924. She complained of headaches and a feeling of weakness, but had no pain. Practically the whole of the left side of the chest was eaten away. There were no respiratory movements and no physical signs of acting lung on that side. The heart appeared normal. The walls of this cavity were insensible to touch or heat or cold, but bled readily when touched. There were no evidences of metastases.

I obtained the following history: Twenty-five years ago she noticed a lump in the left breast which slowly grew until at the end of a year it was about the size of a golf ball. She was then operated upon by a surgeon who is now dead (I could not discover the scope of the operation). Twelve months after the operation there was recurrence in the scars, which she refused to have operated upon. The growth gradually ate into the chest, ultimately producing the condition I have described above.

She died on March 2nd, 1925, conscious to the last, but extremely weak. There was at no time evidence of metastases. A *post-mortem* examination was refused.

Preston. J. BERNSTIEN, M.B., M.R.C.S.

THE GOLD TREATMENT OF TUBERCULOSIS.

PRELIMINARY REPORT BY THE MEDICAL RESEARCH COUNCIL.

VARIOUS gold compounds have from time to time been used in the treatment of tuberculosis. Recently a soluble complex salt of gold and sodium—namely, sodium aurithiosulphate, which has long been known to chemists, and is now made available under the trade mark of "sanocrysin"—has been introduced to therapeutics as a treatment for tuberculosis by Professor Moellgaard of Copenhagen, who has found that it has the advantage of dissociation into complex ions, so that toxicity due to free gold ions is avoided. Such toxic effects as this compound produces in tuberculous but not in normal subjects are attributed to destruction of the bacilli and increased liberation of tubercle toxins; and Professor Moellgaard has also prepared an antitoxic serum for use, when necessary, to counteract these ill effects. The results of experiments on animals and of numerous trials on human patients in some Danish hospitals have been fully described in his book on the *Chemotherapy of Tuberculosis* (autumn, 1924). Critical summaries of these results and of other work in Denmark have been published recently in the *British Medical Journal*[1] and in the *Lancet*. Clinical trials are now proceeding also in Germany and in Canada.

Professor Moellgaard very courteously gave to the Medical Research Council a full supply both of the gold salt and of the protective serum for clinical trial in England, but desired that the preparations should not be made available for general use in medicine until the results of these trials were completed. In December he and his chief clinical colleague, Dr. Secker, visited England, and made a personal communication on the subject to those who were asked to try the preparations; while Dr. Secker remained in London long enough to visit several hospitals, advise on the selection of cases, and give the observers invaluable help during the treatment of individual patients by instruction drawn from his own wide experience.

The preparations were issued by the Council, as on the similar occasion of the introduction of insulin to therapeutics, only to those who were not engaged in private practice—that is, to whole-time professors of medicine or to tuberculosis officers. The Ministry of Health was kept in close touch with the work through a liaison officer. On account of the general interest aroused by discussion of this method of treatment, the Council thinks it desirable to issue this preliminary report on the early results of cases so far treated in Great Britain, and to explain its further policy.

Work in England has been in progress for less than three months; it has not been on a large scale, but the value of the opinions formed has been enhanced by the arrangement which used several observers of small groups working at first independently of each other rather than one observer of a large group. It was evident, when the observers subsequently met in the first conference upon which this report is based, that there was so great a divergence of opinion upon the value of the drug that any single observer, relying solely on his own experience, might easily have been led to a summary opinion that would have been unduly emphatic in his judgement for or against the treatment. The report deals solely with clinical results, and does not consider the laboratory evidence for the effect of the gold salt on tubercle bacilli or infected tissues, nor that for the protective action of the specific serum.[2]

Each dose of sanocrysin was dissolved in 10 c.cm. of distilled water and injected intravenously. The usual amount was 0.5 g. for the first injection and then repeated injections of 1 g. each at intervals of about three days, unless a severe reaction on the part of the patient occurred and compelled delay until the reaction had subsided. The total amount used in any case was generally about 5 or 6 g., and the injections were rarely continued until the goal suggested by the Danish experiences was attained—namely, a final state in which the last injection produced no rise of temperature.

The specific serum, usually from horses immunized by diaplyte tubercle vaccine, though at first a weaker calf serum also received trial, was injected into the muscles in doses of 20 c.cm. Its action is supposed to be that of neutralizing the flood of tuberculous toxins liberated by the action of the gold salt on the infected tissues, and thus of lessening the general severity of the reaction to the chemotherapeutic injection. In cases with heavy tuberculous infection the serum was used either before or together with the first gold injection as a preliminary measure. In mild cases it was not used until a reaction of some severity had occurred, and in many instances it was never used at all.

EFFECTS OF THE INJECTION OF SANOCRYSIN.

Vomiting was often noticed as an immediate effect within a few minutes of the injection. In one control patient, without evidence of tuberculous disease, there was nausea and prolonged anorexia after three injections, but no rise of temperature or any other reaction. There were no other control observations of cases with fever from known causes other than tuberculosis, so that the evidence is not sufficient to ascertain whether the gold salt can be used as a test to distinguish non-tuberculous from tuberculous febrile states. In a group of five cases of pulmonary tuberculosis that were clinically mild but radiologically moderately extensive, there were slight pyrexia and trifling albuminuria, but no other features of reaction. The gold salt in amounts up to 5 or 6 g. therefore seemed to be non-toxic for patients with only slight tuberculous lesions.

Severe reactions were generally produced in cases of more extensive infection. The temperature rose within a few hours to 103° or 104°; but there was no case of hyperpyrexia or of critical fall. Vomiting often recurred, but diarrhoea was not often observed. The patient felt ill, depressed, and lost appetite. A metallic taste was sometimes complained of, and there was a tendency to ulceration of the mouth and throat. The rise of temperature lasted three or four days, but was generally less with each successive dose. After the second or third dose rashes often appeared, like those of measles or scarlet fever, and not often itching. In one case an erythematous rash persisted for a fortnight and was accompanied by an outbreak of many indolent open sores. The rashes were seen in cases where no serum had been given. They were perhaps more frequent in cases of closed tuberculous infection.

Albuminuria was a common occurrence, and in some cases exceeded 1 per cent., though it did not last long. No oedema resulted and there was no evidence of persistent renal lesions. Measurements of blood urea were not made in any of the cases of severe albuminuria. In one necropsy, where there had never been more than trifling albuminuria, 8 per cent. of the total metallic gold injected was found in the kidneys on death twenty-eight days after the last injection

[1] It may be added that a paper by Professor Moellgaard on "The theoretical basis of the sanocrysin treatment of tuberculosis" was published in the BRITISH MEDICAL JOURNAL of April 4th (p. 643). In it he fully explained the theoretical considerations which led him to employ sodium aurithiosulphate, related some of the experiments on animals he has carried out, and indicated the precautions which should be taken in the administration of the drug.—Editor, BRITISH MEDICAL JOURNAL.

[2] These matters are discussed by Professor Moellgaard in the paper published in this JOURNAL on April 4th.—Editor, BRITISH MEDICAL JOURNAL.

of sanocrysin. Gold was proved to be excreted by the bowels and by the kidneys after an injection of sanocrysin. Jaundice of a grave nature, which in the Danish experience was a very rare event, occurred in another patient who died, and a relatively large amount of gold was found on analysis of the liver.

Features strongly suggesting that the gold salt had a direct action at the site of the tuberculous infection were often seen. Thus, in the lungs a focal reaction was evidenced by local pain, a sense of tightness, and by prolonged tachypnoea. This was in at least three instances aggravated by the development of a very critical state in which the pulse became rapid and feeble and the patient so collapsed, though the temperature did not fall seriously, that great anxiety was aroused as to the chances of recovery. Except for a local increase of crepitant râles, there were no clear changes in the physical signs in the lungs during these focal reactions. Cough, however, was generally increased and sputum was at first more abundant if the patient had strength for expectoration. Subsequently both cough and sputum tended to lessen.

Headache was never intense. A general state of depression and lack of vitality, together with loss of weight, tended to develop in cases of extensive infection after a course of treatment, and this retarded subsequent recovery in the hospital wards.

Effects of the Injection of the Protective Serum.

Clinical experience varied on this point. At some hospitals nearly every patient had severe serum sickness, perhaps with its own rash and vomiting, and certainly with severe joint and muscle pains. Other observers never saw such effects. The differences were not explained by reference to any particular batch of serum, or to different effect of calf or of horse serum respectively. There were, however, no examples of dangerous anaphylactic phenomena.

It was difficult to form a clear conclusion as to the benefit of the serum. Some observers thought they had proof of its power to control albuminuria and focal reactions in the lungs, if given early and before these features became serious; others were not convinced. In general, serum was freely used for severe cases of infection. A few trials were made of the influence of the serum on the general state of a tuberculous patient apart from the use of sanocrysin, but they led to no demonstrable results.

Summary of Clinical Results.

Clinical experience in Britain has confirmed the description in Professor Moellgaard's book of the immediate effects of sanocrysin as seen in Danish hospitals. The drug does appear clinically to have a specific action on tissues infected by tubercle bacilli, and the severity of the constitutional reactions does appear to be directly related to the intensity of the tuberculous infection. Further, the drug seems to have but slight toxicity for human patients who are not infected by tuberculosis, though in this respect very few control observations have been made. On account of the severity of the reactions in the first tuberculous patients chosen for treatment, no observer at the beginning felt justified in deliberately making control observations in other febrile infections. For the same reason no one cared to begin straight away with the treatment on a large number of tuberculous cases, but each observer preferred to select three or four individual patients and proceed cautiously.

The total number of cases covered by this preliminary report is small—about thirty, of whom twenty-two definitely had tuberculous infections of the lungs. Two of the pulmonary cases died, death in one hopeless case being perhaps accelerated by the treatment, and occurring in the other unexpectedly as the result of toxic jaundice. The remaining twenty do not lend themselves to any numerical analysis. Uncomplicated pulmonary tuberculosis is a disease of which few physicians can confidently foretell the progress, upward or downward, during any given period of two or three months, which was all the time available for these preliminary observations. But it was the opinion of those observers who had had most experience in dealing with consumption that the early cases of open tuberculous infection of the lungs did show some evident improvement, though there was no dramatic benefit, such as that seen with insulin or salvarsan in their corresponding diseases. On the other hand, cases with more advanced disease did not stand the treatment well, and the condition of some of these has been made worse. The latter experience accords with that of Dr. Secker of Copenhagen. Serious cases of long standing cannot endure the treatment in its present form.

There were two cases, not included in the preceding twenty, in which most striking improvement followed at once upon the use of the drug, both the patients having lain three months in hospital previously without making any advance. One appeared to be a case of closed tuberculosis of the lung, spreading out from hilum glands, though it could not be proved that the pulmonary inflammation was caused by tubercle bacilli and not by some other smouldering infection. The other was a case of tuberculous peritonitis with an encysted collection of fluid that vanished at once upon treatment. In each instance the patient showed the rash and rise of temperature that in other proved cases of tuberculosis have followed the injection of sanocrysin. No case of pleural effusion was treated in this preliminary group because the results in this condition would not have offered any decisive evidence. Lupus of the skin, spinal caries, renal tuberculosis, and tuberculous glands are now being treated, but their progress is not sufficiently advanced to be included in this report.

The evidence, therefore, despite the relatively poor results in open pulmonary tuberculosis—and that is unhappily the commonest form of tuberculosis—is sufficiently encouraging to demand further clinical study. This is particularly so in view of the one experience common to all observers—namely, that the drug seems to exert a specific action on tuberculous tissues. The Medical Research Council expects that many months will pass after the issue of this preliminary report before any further definite conclusions can be drawn. Trial on a larger scale is now justified, and it is hoped to widen the field of work with the help of more observers. But the Council is of opinion that such further trial and extended observations are imperatively required before it can be clearly stated that this gold salt is of value in the treatment of tuberculosis and before it should be made available for general use in medical practice in Great Britain.

Summary of Clinical Observations.

The following section briefly summarizes the clinical observations at the several places where the treatment was used. In every patient radiograms of the chest were taken before, during, and after treatment.

St. Bartholomew's Hospital (Professor F. R. Fraser).

One case, aged 30. General pulmonary tuberculosis; tubercle bacilli found once. Total gold salt used, 5.25 g. Severe reaction at first, but final injection of 1 g. caused no rise of temperature. No definite change.

London Hospital (Professor A. W. M. Ellis).

Five cases of pulmonary tuberculosis, one case of tuberculous meningitis, and one non-tuberculous control. The general impression of the results was definitely unfavourable.

——, aged 17. Four years' history. Extensive pulmonary tuberculosis both lungs. General condition good; had gained 1 st. in weight. Tubercle bacilli found once during treatment. Total gold salt used, 6.5 g. in eight weeks. Severe reactions, fever, rash, ophthalmic reactions, albuminuria, loss of weight. Gradual recovery on stopping treatment to conditions very much as on admission. No change in physical signs. Result: No change.

——, aged 53. Three months' history of pleural effusion and fibrosis. General condition fair. Tubercle bacilli present on one occasion only. Total gold salt used, 2.75 g. Gold salt discontinued because of prostration, albuminuria, prolonged nausea, and anorexia. Severe serum sickness. Lost weight and has not regained it two months after cessation of treatment. Result: No improvement; apparently made worse by treatment.

——, aged 23. Two years' history. Extensive pulmonary tuberculosis both lungs. General condition good; had recently gained 1 st. in weight. Tubercle bacilli disappeared from the sputum during treatment but reappeared later in large numbers. Total gold salt used, 1.5 g. Gold salt discontinued because of vomiting

and continuous hiccup. Prolonged anorexia. Fever, rash, and albuminuria. Three weeks after last injection, onset of hectic temperature with physical signs indicating rapid and extensive spread in the area of pulmonary involvement. No subsequent improvement. Is going steadily downhill. Result: Treatment led to extensive spread of the disease and marked general deterioration.

——, aged 36. Three years' history. Extensive chronic tuberculosis both lungs. General condition excellent; afebrile. Albuminuria. Renal function normal. Tubercle bacilli absent. Total gold salt used, 5.5 g. Moderately severe febrile reactions, nausea, and vomiting. Ten days after the last injection temperature became hectic and has remained so, with marked increase in physical signs and evidence of rapid spread of the infection. At the same time there appeared a very severe exfoliative dermatitis, apparently identical with that seen in severe arsenical poisoning. Result: Extensive spread of the disease; severe exfoliative dermatitis.

——, aged 19. Three years' history. Extensive chronic pulmonary tuberculosis of left lung; early involvement of right. General condition excellent; afebrile. Tubercle bacilli disappeared during early part of treatment, but reappeared later in increasing numbers. Total gold salt used, 7.5 g. Treatment followed by severe and prolonged reactions with fever, rash, albuminuria, and breathlessness. Severe serum sickness. After the third injection the temperature never again reached normal, the physical signs in the chest increased both in quantity and in extent, and tubercle bacilli reappeared in the sputum. Subsequent injections failed to influence the course of the disease. Serum, when given, resulted in violent reactions with rigors and collapse. The resulting situation was a very difficult one. It was obvious that the patient was going steadily downhill. It was decided to try and increase the concentration of the drug, even though, on account of the reactions, serum could not be given. Two injections of 1 g. were therefore given, with one day intervening. Four hours after the second injection there was dyspnoea, cyanosis, and blood-stained frothy sputum. Death occurred in two hours. There was no *post-mortem* examination. Result: Death.

——, aged 9 months. Tuberculous meningitis. Total gold salt used, 0.4 g. in two days. No evidence of any effect was seen. Death occurred on third day. Result: No influence detected.

In addition a case of lymphadenoma or Hodgkin's disease was treated as a control. The patient received three injections of the gold salt and no serum. There was no rise of temperature, no albuminuria, and no rash, but nausea and prolonged anorexia resulted.

ST. MARY'S HOSPITAL (PROFESSOR F. LANGMEAD).

Three cases of pulmonary tuberculosis. The early results were unfavourable and one patient died, apparently in consequence of the treatment.

——, aged 18. General condition good, but tubercle bacilli abundant. Total gold salt, 1.5 g. in four days, and over 200 c.cm. serum. Vomiting, diarrhoea, rash, fever, albuminuria, and definite serum reaction. Focal reaction in lungs. On tenth day after the last injection of gold salt, jaundice appeared and rapidly deepened. The patient died with haemorrhage from the bowels twenty-nine days after the last injection.

Necropsy found spreading tuberculosis in the lungs and recent tuberculous ulceration of the bowels. There was only one hypertrophied kidney, and that showed tubular nephritis. The kidney was not analysed for gold, but in the liver was found 0.028 g. of gold—that is, 4.75 per cent. of the total metal injected.

——, aged 32. Early disease of right apex, afebrile. Tubercle bacilli present. Total gold salt, 5 g. Fever, rash, loss of weight, albuminuria; general condition deteriorated, but is now improving, and temperature is again normal. Physical signs unchanged and tubercle bacilli still present in sputum.

——, aged 29. Peribronchial fibrosis and doubtful physical signs, but tubercle bacilli present; temperature normal. Total gold salt, 6 g. Fever, severe serum sickness, loss of weight, slight albuminuria, pain in chest, and increased expectoration. General condition at first worse, but later improving. No tubercle bacilli in sputum in last three weekly examinations, but patient developed pleurisy seven weeks after treatment was ended.

ST. THOMAS'S HOSPITAL (PROFESSOR H. MACLEAN).

Only early or slight pulmonary tuberculosis was treated, in five cases of which four had tubercle bacilli present. They were in fairly good general health, with few symptoms and generally very little pyrexia. Gold salt was given in doses of 1 g. at four to seven days' interval up to a total of 4 or 5 g. No serum was used. The reactions were slight, a little pyrexia, some albuminuria, and increase of cough. No focal pain in the chest, no anorexia. All the five cases have subsequently improved, but it is difficult to decide whether this improvement is more than would have been effected by ordinary hospital treatment. This group is, however, of great importance as a control to show that the gold salt exerts little obvious effect on the general health of patients with only mild tuberculous infections.

——, aged 27. Three months' history. No tubercle bacilli. Gold salt given, 4.5 g. No reactions except slight albuminuria persisting since fourth dose. General condition improved. *X*-ray examination showed disappearance of triangular opacity in right axilla which had suggested tuberculous infiltration.

——, aged 21. Six months' history. Tubercle bacilli present. *X*-ray examination: Disease upper third of both lungs. Very dense right apex, moderately dense left. Some fibrotic contraction right apex. Had begun to improve already with hospital treatment. Gold salt given, 4.25 g. Slight temperature reactions. Transient albuminuria for five days after fourth dose. Result: Previous rate of improvement maintained or accelerated. Final radiogram shows no change except increased contraction right apex, though radiogram taken during reaction showed increase of shadows. Tubercle bacilli present on discharge, but some evidence of fragmentation.

——, aged 28. Three months' history. Tubercle bacilli present. *X*-ray changes of medium density both lungs, occupying one-third of pulmonary fields. Gold salt given, 5.25 g. No definite reactions. Irregular pyrexia persisted. Attack of pleurisy after four weeks. Result: General condition improved; *x*-ray examination, no change.

——, aged 18. Short history. Tubercle bacilli present. *X*-ray examination: Medium opacity upper half both lungs. General condition good. Gold salt given, 5.25 g. No marked reactions. Result: General condition improved. Sputum—no tubercle bacilli on March 9th, 1925. No sputum since.

——, aged 24. Eighteen months' history. Tubercle bacilli present. *X*-ray examination: Very slight changes left apex. General condition not very good. Two doses, each followed by slight pyrexia. Rash resembling erythema multiforme two days after second injection; increased slowly during next six days; began to fade on fifteenth day. Treatment in consequence delayed, and is now being completed

UNIVERSITY COLLEGE HOSPITAL (PROFESSOR T. R. ELLIOTT).

Four cases, of which two appeared to be cured by the treatment, though the evidence was not conclusive. In two pulmonary cases with tubercle bacilli in the sputum the results were, on the other hand, definitely unfavourable.

——, aged 18. Bilateral apical infection with one year's history. Poor condition, though afebrile, and tubercle bacilli always in sputum. Total gold salt, 6.25 g. in thirty-four days, with 360 c.cm. serum. Much albuminuria, no rash, no severe serum sickness. Marked focal reaction in lungs, with pain, dyspnoea, and a serious circulatory collapse twice. Prolonged vomiting and anorexia. General condition worse and tubercle bacilli in sputum more abundant.

——, aged 29. A hopelessly rapid caseous tuberculosis, chiefly of right lung with less than six months' history. Tubercle bacilli in sputum. Patient so ill that he seemed unlikely to survive more than a couple of months. Total gold salt, 4 g. in eleven days, with 300 c.cm. serum. Slight albuminuria and no rash. Marked focal reaction in lungs with dyspnoea that persisted. Died four weeks after last gold injection, with repeated pulmonary oozings of blood.

Necropsy.—Necropsy confirmed the radiograms in showing that the caseous changes had spread rapidly into the left lung since treatment began; and the detachment of one large mass of caseous lung tissue loose within a cavity on the right side suggested that some unusually active process of destruction had been taking place. There was no tuberculosis outside of the lungs.

Disappearance of Gold from the Tissues.—Analysis found that of the total metallic gold given (40 per cent. of 4 g. salt—that is, 1.60 g.) 0.128 g., or 8 per cent., was still present in the kidneys. The percentage of gold to the weight of the kidney was 0.037. The liver retained a total of 0.012 g.—that is, barely 1/70 of the percentage found in the kidney. The lungs contained only traces that could not be measured. This rapid disappearance of the gold from the tissues where its effect was desired suggests that the salt should not be given intensively in severe cases, as advised by the Danish physicians, but at longer-spaced intervals.

——, aged 20. Tuberculous peritonitis with large encysted collection of fluid in the lower abdomen. Pleurisy at 14, with present *x*-ray evidence of fibrosis on right side. No tubercle bacilli in sputum and abdomen not explored. Condition stationary during three months' rest in hospital previous to treatment. Total gold salt, 4.5 g. in seventeen days and 80 c.cm. serum. Febrile reaction, with rash and some pain in right chest and in abdomen. The tumour had vanished by the time the last dose was given. No recurrence a month later, but still some chronic inflammation found on rectal palpation of the uterine adnexa. Patient gaining weight. Apparently a most definite improvement as the immediate result of treatment.

——, aged 14. Query localized tuberculous bronchopneumonia. Admitted for large quiescent tuberculous glands in neck, which were excised and microscoped. After anaesthetic for this operation the patient developed consolidation of left lower lobe, which took four weeks to clear up. *X* rays subsequently showed much enlargement of hilum glands and a shadow spreading outwards in the middle of the right lower lobe. The patient was under medical treatment in hospital for three months, during which time there were no tubercle bacilli in sputum, but there was continuous pyrexia and varying loss of weight. Boy seemed seriously ill when gold treatment was begun. Weight 5 st. 7 lb. Total gold, 1.25 g. in six days. Severe and prolonged rash, rise of temperature, and fall of weight to 5 st. 2 lb. No focal reaction in glands of neck. Then recovery,

with temperature thenceforward normal, and rise of weight by 2 or 3 lb. weekly to 6 st. 5 lb. on discharge from hospital. Still faint *x*-ray evidence of fibrosis in area of earlier opaqueness in right lung. The boy was cured with unusual rapidity of his lung inflammation, which was not actually proved to be tuberculous, though its appearance was clinically identical with that of hilum tuberculosis.

CARDIFF (PROFESSOR S. L. CUMMINS).

Three cases of early pulmonary tuberculosis, of which two showed definite improvement, and one, whose preliminary course of treatment has only just been completed, feels better, although he has not yet started to regain weight.

——, aged 21. Early disease involving two lobes, but only slight in density. Fair general condition. Tubercle bacilli present. Total gold salt, 4.5 g. in five weeks, and 92 c.cm. horse serum. Moderate reactions after first four doses. Sputum ceased. Tubercle bacilli vanished. Lost 2½ lb. during treatment. Has now regained this and added about 4 lb. to original weight.

——, aged 28. Definite pulmonary disease right apex, with cavitation. Tubercle bacilli present in great abundance. Total gold salt, 6.5 g. in seven weeks, and 95 c.cm. horse serum. Moderate reactions and transient albuminuria after gold salt. Severe reactions after serum. Sputum diminished and tubercle bacilli greatly reduced in number. Has lost 9 lb. during treatment. Is now feeling "as he used to before illness," but has not yet started to regain weight.

——, aged 15. Dullness and bronchial breathing upper third right lung. Tubercle bacilli present in fair numbers. Good general condition. Total gold salt, 3.25 g. in five weeks, and 36 c.cm. serum. Reaction and slight albuminuria after first dose. Intense serum sickness. Lost 3 lb. at first. Has now put on 4 lb. Is still under treatment. Appears much improved so far. No tubercle bacilli in sputum on last three examinations.

EDINBURGH (PROFESSOR SIR ROBERT PHILIP AND PROFESSOR D. MURRAY LYON).

Work at Edinburgh was not commenced until January, and while a much larger series of cases was tried than at any individual centre in London, few of these have yet reached the end of treatment. In general the results seem favourable. Serum was sparingly used, and in many cases not at all. In some tuberculous cases the Danish antituberculin serum was used alone without the gold salt, and it was not seen to have any constant influence on the temperature curve. All the patients selected were without exception afebrile at the beginning of the treatment. In the pulmonary cases tubercle bacilli were present at the commencement.

Immediate Effects of the Drug.—The first dose of 1/2 g. sanocrysin produced either very little reaction or a rise of about 2° F., the whole disturbance as a rule passing off in twenty-four to forty-eight hours. In two cases the temperature reaction to the first dose was prolonged for about ten days, a swinging temperature increasing for the first three or four days, reaching to about 103° F., and then gradually disappearing. No albuminuria or rash followed the first dose. The second dose of sanocrysin was usually followed by much larger temperature disturbance, lasting a little longer than that of the half-dose, but in most cases each subsequent dose gave rise to a smaller temperature response, until in some cases no rise occurred at all. A large number of the cases complained of loss of appetite, and in some the anorexia was very severe; vomiting has been frequent—in some cases within a few minutes after each dose, in other cases a few hours later; or, again, occurring only in the early morning each day.

Albuminuria.—A considerable quantity of albuminuria might appear after the second or third dose and remain present for several days, gradually decreasing in quantity, even without the use of serum. Renal cells and casts were present in some of the cases, but there have been no other signs of renal irritation or nephritis. A case of tuberculous kidney showed no increase in albuminuria under treatment, but after four doses treatment had to be suspended because of recurring vomiting.

Rashes.—Skin rashes have appeared in about three-quarters of the cases, irrespective of whether they have had serum or not. The rashes have varied considerably in character, from fleeting erythemas and urticarias to persistent dermatitis. In some cases the whole rash disappeared in a few hours, and in many it lasted for three or four days. The rashes were judged by an observer who had clinical familiarity with those caused by extensive tuberculin treatment to be very similar to the latter. In one pulmonary case a severe reaction has persisted for about three weeks, the whole skin being inflamed, the tissues about the face swollen, and there has been a universal desquamation. Apparently this subject had had some previous skin trouble.

Results.—In three pulmonary cases with abundant tubercle bacilli and definite *x*-ray changes there was some improvement. Sputum was lessened, but a severe rash occurred in two, and in one of these there was persistent vomiting and anorexia. In eight other cases, including lupus of the face, renal tuberculosis, and scrofulous glands of the neck, no alarming features of reaction have yet been observed.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

OXFORD DIVISION.

THE second meeting of the year was held at the Radcliffe Infirmary, Oxford, on March 25th. Dr. A. W. NEILL was in the chair, and about forty members were present.

SKIN DISEASES IN CHILDHOOD.

A paper on some common skin diseases in infants and children was read by Dr. A. M. H. GRAY, physician for diseases of the skin, University College Hospital, London, and the Hospital for Sick Children, Great Ormond Street. He said that the skin of infants was very delicate, but was usually well protected by the attentions of parents and nurses, consequently bacterial infection was not very common. Streptococcal and staphylococcal infections were, however, met with. Streptococcal infection took the form of a bullous eruption, starting from the site of inoculation and spreading eccentrically. The rate of spread varied mainly with the virulence of the organism. Bullous impetigo or pemphigus neonatorum could be distinguished from syphilitic pemphigus by the symmetry of the latter, its tendency to affect the palms and soles, the presence of other types of lesion, and the malnutrition of the patient. In treating streptococcal pemphigus care must be taken to avoid loss of body heat, and large wet dressings should be avoided. The most convenient dressing was lin. calaminae to which 1 or 2 per cent. of ammoniated mercury had been added; strips of linen were soaked in this and pads of cotton-wool applied outside. Staphylococcal infection took the form of multiple boils, which were seen in weakly infants. Incision and drainage, keeping the patient warm, and care as to feeding, were the lines along which treatment should be directed.

Infants (Dr. Gray continued) were very prone to eczema of the face and scalp. Two varieties were generally recognized. The commonest form started on one or both cheeks as a red itchy patch, and friction caused the eruption to spread over the rest of the face; the eyelids and perinasal region often escaped, as they were protected by their position from friction. Later the scalp might become involved, and eczematous patches develop on the trunk and limbs. This type occurred chiefly in fat children under 1 year old, and was seen mainly in winter. It appeared to be generally associated with overfeeding. Treatment consisted in reducing the quantity of the feeds, whether breast or bottle, protection of the face from the air by a suitable mask and from friction by fixing down the hands, and by avoiding exposure to extremes of heat and cold. Coal-tar ointment applied on the mask was most generally useful; 3 per cent. crude coal tar in pasta zinci (*B.P.C.*) acted extremely well. The tar should not be applied if much sepsis was present; septic crusts could be first dealt with by 1 in 1,000 flavine-starch poultices. The other type of facial eczema usually began on the scalp and appeared to be independent of the nutrition of the child; it was thought to be primarily of seborrhoeic origin, but usually responded to the tar ointment. In some cases 1 or 2 per cent. sulphur and salicylic acid ointment was of value.

In children past the first year of life eczema was less often seen except in association with septic infection. Streptococcal infection was, however, very common. Varying forms were seen. The ordinary impetigo contagiosa started as a small thin-walled blister which rapidly ruptured, but the serum exuding from the base of the blister dried to form a crust. The lesions were usually isolated and the spread was eccentric. In some cases, however, bullae were produced and the spread might be more rapid. Lotions were the most suitable for this condition, 1 in 1,000 flavine applied on lint or linen and changed several times daily being advised. In other cases slowly spreading blisters, which flattened down and dried up in the centre, but continued to spread at the edge, were found—the so-called circinate impetigo. This was treated by

dilute white precipitate ointment. Streptococcal infection was liable to occur in the deeper folds of the face, behind the ears, in the angles of the mouth, nose, and eyelids. Here fissures tended to occur, and these were often troublesome to heal. The point was to prevent the cracks from being opened when changing the dressings; this was easy except at the angles of the mouth, and here in troublesome cases it might be necessary to fix the angle of the mouth by a small piece of zinc oxide strapping after applying the weak mercurial ointment. The pale, dry, circumscribed scaly patches, known as pityriasis alba, seen on the faces of children were usually, though not always, of streptococcal origin. They often responded to an ointment of ac. salicyl. gr. x, ung. hydr. ammon. dil. ad ʒj. Severe impetigo of the ear and surrounding area due to middle-ear discharge often spread to the scalp and produced a severe form of septic dermatitis with much secondary staphylococcal folliculitis. Such cases were extremely troublesome to treat, and required all the resources of the dermatologist. Impetigo contagiosa often complicated infection by animal parasites. In these cases, where scratching was a marked feature, ulceration occurred in some of the lesions and ecthyma was produced. Ecthyma lesions were best treated by tying up with 3 per cent. ammoniated mercury in pasta zinci (*B.P.C.*) after the crusts had been removed; and the parasitic condition, of course, must first be treated.

A condition often seen among children was an itchiness of the flexures of the elbows and knees, sometimes affecting the flexures, and also the sides and front of the neck and the face. The cause of the itching was still undetermined. The skin lesions seen were the result of friction. These cases could often be cured in the early stages by tying the affected areas with the coal-tar paste; more resistant cases often responded to *x*-ray treatment. An endeavour should be made to get these young patients well, because if the condition drifted on to adult life it was extremely intractable.

Laboratory Diagnosis of Enteric Fevers.

A paper on the laboratory diagnosis of the enteric group of fevers was read by Dr. W. T. Collier, honorary assistant physician to the Radcliffe Infirmary. It was based upon the investigation of the 20 cases of enteric admitted to the infirmary during the five years 1920-24. Of these, 12 were due to *B. paratyphosus* B, 6 to *B. typhosus*, and 2 apparently to mixed infections. There were no deaths. Of the 6 cases of typhoid, 3 occurred in three members of the same family. A rough clinical classification showed that only 8 of the 20 cases could possibly be described as severe; 4 were regarded as moderate and 8 as mild. The mild cases had an average febrile period of seventeen days; they were all cases of paratyphoid B, except one case of *B. typhosus* infection in a baby aged 2. It was this frequency of the mild case of paratyphoid B which led Dr. Collier to bring forward the question of diagnosis, for most of the cases treated outside the hospital had also been mild cases of paratyphoid B, and he felt convinced that a good many cases must escape detection. With a severe infection the possibility of typhoid was usually obtrusive enough to suggest an examination of the blood; but in the mild case this possibility might not even be considered. The only two diseases in his experience with which confusion tended to occur had been influenza and acute appendicitis. One case in the present series was sent into the hospital as a case of appendicitis, and he knew of two cases outside in which appendicectomy was performed before the disease was recognized.

In the diagnosis of enteric (Dr. Collier continued) three laboratory methods merited consideration—the white cell count, the Widal or agglutination test, and direct culture of the organism.

White Cell Count.—In enteric this showed a leucopenia and not a leucocytosis. It was unfortunate that several of the diseases from which typhoid might have to be distinguished—for example, influenza, tuberculosis, subacute bacterial endocarditis—also showed a leucopenia; but where a septic infection was in question the white count might be of great value.

The Widal Reaction.—This was the most generally useful means of diagnosis they possessed; in all the twenty cases, except one, it was positive at the first examination and in most of them to a dilution of 1 in 250. All the cases were examined by Dreyer's macroscopic method: in inoculated individuals this method was essential. Since this was an immunity reaction, depending on the formation of agglutinins, the test did not usually become diagnostic until the seventh to the tenth day. It attained its maximum on the eighteenth to twentieth day, and then fell, at first rapidly and later more slowly, and might persist for many years after the infection. A single dose of vaccine, on the other hand, produced a maximum response in a much shorter period, for which reason seven to ten days was chosen as the optimum interval between doses. The Widal reaction remained positive for a very variable period after inoculation, but probably for never less than two years. Moreover, there was very great variation in the individual's response to the three components of the vaccine. It was interesting to note that detoxicated vaccine did not apparently produce a positive Widal reaction. As to the significance of a positive Widal reaction, it might mean one of three things: (1) active infection, (2) past infection, and (3) past inoculation with the particular organism. While diagnosis in an inoculated individual was a comparatively simple matter, it must be based on two or three comparative tests performed at three- or four-day intervals—and this delay, of course, detracted to some extent from its usefulness. Diagnosis was based in the earlier stages on a rise, in the later on a fall in the titre of the reaction. The phenomenon of coagglutination (occasional non-specific stimulation of agglutinin formation) did not in actual practice usually cause difficulty. Thus, especially in the inoculated, infection with typhoid might cause some rise in the A and B agglutinins, and a non-specific infection such as pneumonia might slightly raise the agglutinin titre of all three. The limitations of the Widal test were: (1) it did not usually become positive until the seventh to tenth day, and in rare cases might remain negative throughout; (2) it might only be evidence of a past infection, so that unless the clinical condition was suggestive of typhoid the "agglutination curve" must be ascertained by a second test after an interval of three or four days; (3) in all inoculated cases the same procedure was necessary, and the blood usually had to be examined thrice.

Culture of the Organism.—Much the most trustworthy method was that of blood culture. The disease commenced with a bacteriaemia, and in the first week blood culture was almost invariably positive; it was therefore a valuable complementary test to the Widal reaction. After the first week the chance of cultivating the organism from the blood gradually diminished. The organisms were also present in the stools at a fairly early period, but their isolation was apt to be difficult and tedious, and the method was not therefore very useful for diagnosis. In the urine the organism was only present in some cases, and usually in the later stages.

Miscellaneous Cases.

Mr. E. C. Bevers showed a patient in whom he had performed aseptic resection of the colon for carcinoma by Fraser's method, and described the technique of the operation.

Mr. Hugh Whitelocke showed two cases for diagnosis: (1) A boy, aged 15, with a painless cystic swelling the size of a hen's egg at the root of the right side of the neck of four weeks' duration. Since first seen some days previously the swelling had undergone a change, and in view of the supervening redness of the skin Mr. Whitelocke agreed with the suggestion that it was probably a breaking down tuberculous supraclavicular gland. (2) A man, aged 40, with a painless general enlargement of the liver, slight cyanosis of the face and hands, and transient oedema of the feet. The liver, which reached the umbilicus, was smooth and firm, and had been first noticed to be enlarged six weeks before by the patient's doctor (Dr. Bingham Marshall of Buckingham) during the routine examination for an attack of bronchitis. There was no enlargement of the spleen, and various laboratory tests were negative. In view of the uncertainty of the diagnosis exploratory laparotomy was to be carried out at a later date (the condition was then found to be one of portal cirrhosis).

Mr. Stevens showed a man, aged 47, also with hepatic enlargement. The history dated from seven weeks before admission to hospital, when the patient noticed fullness and flatulence after meals, with a subsequent feeling of weakness and loss of weight. The case was regarded generally as one of malignant disease.

Reports of Societies.

MORTALITY OF APPENDICITIS.

A MEETING of the Section of Surgery of the Royal Society of Medicine was held on March 4th, with the President, Mr. H. J. PATERSON, in the chair. A discussion upon the mortality of appendicitis was opened by Mr. JOSEPH E. ADAMS (whose remarks appear in full at page 723 this week).

Mr. R. J. MCNEILL LOVE, who continued the discussion, referred to the two schools of thought with regard to the treatment of certain types of appendicitis; one school operated upon all cases as soon as diagnosed, whereas the other school in certain selected cases gave the acute inflammatory reaction an opportunity to subside before operating. In two articles in the *British Journal of Surgery* he had analysed a number of statistics referring to a total of 2,018 cases of acute appendicitis, of which 110 died, giving a mortality of 5.45 per cent. These cases were divisible into two types: (1) immediate operation, 1,677 cases with 98 deaths, a mortality of 5.8 per cent.; (2) expectant treatment, 228 cases, of which 8 died, a mortality of 3.5 per cent. All surgeons were agreed that in the early stages when the appendix was not perforated operation should be performed at once. The mortality in his series for operation within forty-eight hours of the onset was 2.2 per cent. of 718 cases. When the cases where operation was performed between the third and fifth days were considered it was found that the mortality (of 612 cases) was no less than 10.2 per cent. During this period natural immunity had been exhausted and acquired immunity was not yet established, and operation accelerated the absorption of toxins where the patient was least able to deal with them. For such cases the risks of expectant treatment were considerably less. The risk of rupture into the peritoneal cavity of a localized abscess was reduced to a minimum by permitting only water at first and later fluids by the mouth, and withholding all aperients. Fomentations were applied and Fowler's position adopted, and, if necessary, a glycerin enema was given to relieve discomfort. In his series there was only one case where the calamity of intraperitoneal rupture of an abscess occurred, and that followed the sudden distension of the colon by a soap-and-water enema. Of 228 cases in which expectant treatment was adopted, 151 (nearly 70 per cent.) subsided and were subsequently submitted to appendicectomy, with a mortality of 1.9 per cent. In the remaining 77 cases expectant treatment had to be abandoned and operation was performed, either because the general symptoms became more marked or because a local abscess formed which increased in size. The mortality of these 77 cases was 5 or 6.5 per cent., only a fraction more than the mortality of cases submitted to immediate operation, so that a brief delay, even when the symptoms did not subside, did not appreciably increase the mortality. When expectant treatment had been successfully adopted there remained the question of the best time for operation. In his series, 151 cases had been operated upon one week after the temperature and pulse were normal, but this period was probably too short, as it was found necessary to drain 40 per cent. of the cases. Sir George Beatson recommended operation when the temperature, pulse, and blood count were normal, the latter indicating resolution of the inflammation or the presence of merely sterile pus. A third school advocated operation after a delay of three months from the time when infection had subsided. In addition to the definitely lower mortality of expectant treatment there were also the advantages that immediate post-operative complications such as intestinal obstruction, faecal fistula, etc., were diminished, late sequelae such as incisional hernia were less frequent, and the operation itself was much simplified. Expectant treatment imposed a greater tax on the nursing staff and necessitated continuous supervision by the surgeon, and for these reasons was only practicable in hospital practice.

Mr. C. A. R. NITCH considered that the problem of the treatment of cases first seen about the fourth day was an exceedingly difficult one. In such cases where there was a mass to be felt in the abdomen he usually adopted the expectant plan, but felt the responsibility of doing so to be very heavy, since the mortality of a slowly leaking abscess was very high. As regards the time for appendicectomy in delayed cases, he preferred to wait for three weeks after the infection had subsided, since he had known patients to die of general peritonitis when the period was reduced to one week after the temperature and pulse were normal. A still longer delay, on the other hand, meant denser adhesions and a more difficult operation.

Mr. CECIL ROWNTREE said he always adopted the plan of immediate operation. In cases at about the fourth or fifth day when the appendix was difficult to find he did not persist in the search, but merely drained; he performed the operation of removal of the appendix about three months later, when the inflammatory mass had disappeared, leaving singularly little in the way of adhesions, so that the operation was a simple one. His impression was that the mortality of appendicitis was definitely less now than it was ten years ago, and he suggested that the Registrar-General's figures, which showed an increase in the mortality, were accounted for by the number of semi-skilled surgeons now operating and to their persistence in removing the appendix in cases where it would more safely be left.

Mr. A. E. ROCHE related two cases which showed the extreme difficulty of deciding which cases were suitable for expectant treatment. In one case, first seen on the ninth day with an abscess, operation was delayed until the thirteenth day, when the appendix, with an encysted abscess in the omentum, was removed without pus being seen. It was possible to close the abdomen completely, and the patient made an excellent recovery. In the other case, first seen on the fourth day, operation was delayed on account of some doubt as to the diagnosis. On the eleventh day, after the temperature and pulse had been normal for some days, there was a sudden drop in the temperature with a rise in the pulse, and the patient rapidly succumbed. *Post mortem* pus was found up to the diaphragm.

Mr. H. S. SOUTTAR invariably operated within an hour of making the diagnosis, although he agreed that operation was often very difficult about the third to fifth day, and required the highest degree of surgical skill and judgement. He used a small incision in order to limit the field, and did not persist in attempting to remove the appendix when it was not easily found. On the other hand, he knew of cases where the expectant form of treatment was followed with complete success. One country practitioner boasted that he never called upon a surgeon for cases of appendicitis, as abscesses when they formed invariably burst into the rectum. At the age of 65 this practitioner himself had appendicitis and refused to be operated upon. In due course an abscess formed which burst into the rectum, and complete recovery ensued.

Mr. H. W. CARSON thought that the time factor was not the only one to be considered. The age of the patient was also important. For children he considered the safest plan was to operate at once. But in the case of adults there was a period, generally about the fourth day, when an ill timed operation had to be concluded by draining a bleeding granulating mass left by the surgeon, although no pus might have been seen. He thought that one week's delay after the temperature and pulse had fallen to normal, in the cases treated expectantly, was insufficient, as the same state of affairs might exist then. There was one position of the appendix which called for operation without delay at any stage—namely, the 5 o'clock position, in which the appendix was hanging over the brim of the pelvis; in this event the diagnosis was made by rectal examination, for abdominal signs might be completely absent. He considered that the important question of pre-operative treatment had not received due attention from teachers of surgery; the adoption of the Fowler position, for example, was just as necessary before operation as after, and yet it was rarely practised as a pre-operative measure.

The PRESIDENT considered that in addition to the 5 o'clock appendix the retrocaecal appendix should be removed at once. His usual practice was to operate at once, and he nearly always removed the appendix; he thought that he only abandoned the search for the appendix in about 2 per cent. of cases. He asked Mr. Adams how, short of opera-

tion, it was possible to tell when the inflammation had spread beyond the appendix.

Mr. McNEILL LOVE, in reply, agreed that a week was too short a period to allow after the temperature and pulse fell to normal, as was proved by the fact that 40 per cent. of cases operated on after this interval needed drainage. Expectant treatment was not so successful in children.

Mr. ADAMS, in reply, said that of 9 cases which died after expectant treatment, 3 died of general peritonitis, 3 of small bowel obstruction, and 3 of subphrenic abscess. In reply to the President, he said it was impossible to tell accurately what was happening inside the abdomen except at operation. If expectant treatment were generally adopted by hospitals there was a danger that the practice would extend to those treated elsewhere, whereas expectant treatment should only be adopted when the case was under the constant supervision of the surgeon who would, if and when necessary, operate.

IMMUNIZATION AGAINST TUBERCULOSIS.

AT a meeting of the Section of Pathology of the Royal Academy of Medicine in Ireland held on March 27th, the President, Professor J. T. WIGHAM, in the chair, Dr. NATHAN RAW read a paper on the immunization of animals and man against tuberculosis.

Dr. Raw maintained that the protection of the human race and cattle by some safe and scientific method of active immunization was the only effective way by which this preventable scourge could be eradicated. Cattle, being susceptible only to bovine infection, could be protected more easily than human beings, who were susceptible to infection by both human and bovine bacilli, though not simultaneously. The vaccine he had used in his endeavour to immunize cattle was prepared from cultures of human tubercle bacilli which had been attenuated by monthly subculture during the last eighteen years. The present cultures, representing the 216th generation, were still true to type, but even when injected in large quantities into animals were non-tuberculogenic and avirulent. Nearly all calves were born free from tubercle, and it was possible to give them sufficient immunity to resist ordinary infection. He had up to the present vaccinated over two hundred pedigree calves. The first injection of 0.025 mg. of human bacilli, previously killed by heat, was given at the age of one week, and the second injection at the end of the second week; almost all of these calves were negative to the test with Pasteur's tuberculin during the last two years. He could not say how long the immunity would last. The problem of immunizing children was more difficult, but during the last seven years he had treated over four hundred children, each of whom had a tuberculous parent, with two doses of bovine vaccine. Sufficient time had not elapsed to express any opinion as to its value. The vaccine, being prepared from dead attenuated cultures, was quite harmless, and gave rise to no reactions.

Sir JAMES CRAIG was particularly impressed by Dr. Raw's remark that there could be no hope of reducing the amount of tuberculosis in the country until better housing conditions were introduced, with better food and clothing for the poor.

Sir JOHN MOORE referred to the danger in the consumption of dairy milk, owing to the mixing of the milk from various farms, and emphasized the importance of the duties of the medical officers of health.

Professor J. E. CRAIG said that in Ireland only a half-hearted attempt was being made to check the disease in cattle. At present the aim of the Tuberculosis Order in Ireland was not so much the control of the disease in cattle as the prevention of its transference through milk to human beings. Unfortunately this Order was not being rigidly enforced, and milk infected with tubercle bacilli was often sold to the public. In England attempts were being made to get tubercle-free herds; but even this did not benefit poor people, for the milk from these herds was sold at a higher price than other milk. He felt that the object of workers should be, not to immunize cattle to disease, but to eradicate it. In America and Canada some progress had been made. Although good results had been obtained experimentally by immunization the results in the fields had not been good. Von Behring had prepared a vaccine from human bacilli, and in his experiments good results had been obtained. Animals inoculated with this vaccine only remained immune while the organism continued in the body, and therefore an animal which was tubercle-free while a calf was liable to contract tuberculosis when a cow, and to convey the infection to its milk. Immunity apparently depended on the retention of living tubercle bacilli in the body. In Great Britain the use of vaccines had been employed on a fairly large scale, with the object of eliminating tuberculosis in cattle, but the results obtained by these vaccines were quite different from those of Dr. Raw. It seemed to him that vaccination in connexion with immunity had not yet gone beyond the experimental stage; he hoped that in the future preventive vaccination would succeed, and that calves, even of tuberculous animals, kept under ordinary conditions, would remain free from the disease. This would remove a great deal of the expense and trouble with which dairy farmers were at present faced.

Dr. W. D. O'KELLY said that in countries where the dairy industry was well developed about 50 per cent. of the cattle were tuberculous. In order to stamp out bovine infection in human beings he thought it would be necessary to sterilize all milk. Men, oxen, fowls, and monkeys were most susceptible to tuberculosis; pigs were less susceptible, the disease only occurring in about 3 per cent., and it was the same with sheep and goats. The endothelium of the lung was very susceptible to infection by tubercle bacilli, and in rabbits inoculated with the human bacillus the first parts infected were the lungs and the kidneys. Then, if the animals survived long enough, the joints became infected. The lungs of the ox could be to some extent infected with human bacilli, and if large doses of human bacilli were given to an ox it might die. An ox, when infected, developed an acute attack, but generally, if it overcame this, it survived. Tubercle bacilli were not found in the muscles, and the salivary glands usually escaped, but in 90 per cent. of tuberculous pigs the salivary glands were involved. He did not think the bovine bacillus was the common organism in the joints and bones; young children were perhaps more liable to an infection of the joints and bones than adults, since in adults the bones were more mature. He did not see why, if the vaccine was avirulent and non-toxic, the animals to which the vaccine was administered must be free from tubercle bacilli; he thought this was contrary to the experience of other observers. If the organism was non-toxic and avirulent, what sort of an antibody did it produce? Why could not living attenuated micro-organisms be given? He was glad to notice that Dr. Raw did not favour the transmutation of micro-organisms.

Professor JAMES WILSON said that when he was a student at Edinburgh Koch's tuberculin had been introduced, and great results were expected, but it was soon found to be not a cure for tuberculosis, though a very good diagnostic agent. Some years ago, on his father's farm, there had been a suspected case of tuberculosis in a cow, and by the use of the tuberculin test seventeen cows out of a herd of forty-five were found to be tuberculous, as well as a yearling heifer. Very few of the cows, however, had the udder infected. The infected cows were isolated, and those with healthy udders were allowed to suckle their calves. The premises were thoroughly disinfected, and at the end of the year all the calves were found by the tuberculin test to be free from infection. In some cases the infected cows continued to react to the tuberculin test for upwards of five years, but none of the calves treated on this plan were infected. A similar experiment in two farms in Aberdeenshire gave similar results, and pointed to the great importance of a thorough disinfection of the byres. The two most important things in connexion with the disease in cattle were thorough disinfection and separation of the infected cattle from the non-infected.

Professor J. W. BIGGER said that in a series of fifty Dublin specimens of milk which he had examined he

found that four contained tubercle bacilli. Diseases could be put into two classes: (1) self-curing, such as diphtheria or scarlet fever, the survival from which usually conferred complete immunity; and (2) those which were not self-curing, such as tuberculosis and syphilis. Tuberculous patients might improve, but after some time they usually became ill again and died. This fact was rather depressing when considering the possibility of curing the disease. Calmette, in France, had acted on the assumption that immunity could not be produced without injections of living tubercle bacilli, and had obtained some very good results. This method was very suggestive in view of Pasteur's original work on anthrax. Dr. Raw had referred to the antagonism between the human and the bovine bacillus, and said that if a child contracted bovine tuberculosis from milk it would not develop human tuberculosis. This was a most pernicious doctrine. There was considerable difficulty in isolating human and bovine bacilli from the same patient, but it was not right to say that the two types could not coexist in the body.

Mr. NORRIS said that undoubtedly tuberculosis was the most serious scourge with which veterinary surgeons had to contend. During the last forty years various methods had been adopted for the treatment of this disease in cattle, but they might all be classed as unsatisfactory up to the present time. Sometimes a herd was tubercle-free for a long time, and then suddenly some of the herd became infected again. In America tuberculous cattle were slaughtered, and the State paid compensation for such animals. By this method quite good results were obtained, but it was too expensive for use over here. In some parts of the country the Tuberculosis Order was strictly enforced, but in others not; vaccination had been practised for a long time, but he thought it had been a failure. Dr. Raw had vaccinated some two or three hundred calves, but had not used control animals with them, and the only way he tested them was with tuberculin after several months or a year, and so far no reaction had been noticed. It was a pity that the animals had not been inoculated with virulent material, and also that they were not controlled, in order to test the results; he saw no other way of arriving at a conclusion. Much good would result from the co-operation of medical practitioners and veterinary surgeons in connexion with tuberculosis amongst animals.

LATERAL HEMIANOPSIA.

A MEETING of the Devon and Exeter Medico-Chirurgical Society was held at the Royal Devon and Exeter Hospital on March 26th, the President, Mr. R. WORTHINGTON, in the chair.

Dr. R. N. CRAIG showed a married woman, aged 28, a nullipara, who for five years had suffered from a variety of symptoms. There was no definite history beyond influenza, worry, and family bereavement. There had been transitory occipital headache, some paresis of face, also transitory, and right lateral hemianopsia. She was depressed and inclined to be hypochondriacal, but without morbid impulses; the memory was poor. The hair was thin, the scalp dry, and the individual hairs shortened. She suffered from chilblains in both feet, and the glucose curve showed variations from the normal; there was dulling of the previously normal sexual life. Dr. Craig considered that there had been improvement under treatment with calcium lactate and parathyroid.

Dr. RANSOM PICKARD considered that transitory hemianopsia was frequently related to a localized transitory oedema of the brain. He had seen a somewhat similar case in a girl responding likewise to calcium lactate. Dr. F. A. ROPER remarked that no one particular endocrine deficiency could be assigned as a cause for the deficiency and that it would seem that the ovary, pancreas, and thyroid could be equally arraigned. Dr. CRAIG, in reply to the President, said he considered that parathyroid intensified the action of calcium lactate. He was about to employ pituitary also in this case.

Mr. NORMAN LOCK showed a lad, aged 21, who had sustained a compound fracture of the right humerus, together with extensive burn of the arm, the injury having been caused by the arm being drawn between the hot rollers of a printing press. Excellent progress had been made with local applications of chlorinated eucalyptol and paraffin. There was still stiffness at the elbow-joint, but the raw surface was now fit to take a graft.

Dr. SHAW read notes on the case of a boy, aged 14, in whom a large swelling of the humerus was stated to have followed almost immediately on a fall on the hand during a game of skittles. A radiogram showed what seemed to be a myeloid tumour of the humerus. Dr. Shaw excised the myeloid area of the bone and rejoined instead of grafting. Sections of the tumour indicated the condition known as osteitis fibrosa. Discussing this case, Mr. B. DYBALL referred to the recent work of Mr. Elmslie, whose cases ranged from blood cyst of bone to true myeloma. In Mr. Dyball's opinion the case before the meeting closely approached to myeloma.

Dr. MILLER MUIR read notes on, and showed skiagrams to illustrate, a case of large tumour in the left sacral region with slight extension over the middle line. The case had been greatly relieved by *x*-ray treatment, although, as regards the calcified portion of the tumour, there was diminution in area.

Dr. J. M. HENDERSON described eleven cases of dysentery occurring recently in the Devon County Mental Hospital. In six of these a positive Flexner reaction was obtained, and his results had been confirmed by Dr. R. Solly. A Shiga organism had been isolated, but agglutination was negative. Dr. Henderson showed the lower part of the ileum from one of these cases, the ulcerative process confining itself to the small intestine.

Mr. DYBALL read notes on two cases: (1) A girl with a twisted Fallopian tube. (2) A boy admitted to hospital with ruptured spleen, the interest being that the direct violence causing the rupture was delivered at the fifth left intercostal space—unusually high for this injury.

Dr. SOLLY read, in association with Mr. DYBALL, a short paper on malignant disease of the testicle illustrated by a case of carcinoma recently operated upon by Mr. Dyball. Dr. MILLER MUIR thought that the outlook was not good from the point of view of *x*-ray treatment in those cases where there was glandular infiltration above the groin.

INDUCTION OF PREMATURE LABOUR.

AT a meeting of the North of England Obstetrical and Gynaecological Society at Liverpool on March 20th Miss M. H. F. IVENS (Liverpool) read a paper on the induction of premature labour, a record of seventy-two consecutive cases.

Miss Ivens, after a brief historical reference to the introduction of this procedure, and to the changes in method introduced at various times, discussed the propriety of the operation, more especially in cases of minor pelvic contraction. Williams thought that the operation had lost popularity in America owing to the high foetal mortality. Statistics by Ahlfeld, Bar, Leopold, and Pinard showed a foetal mortality of 12 to 45 per cent.; they held that the operation was no longer justified, and that equally good results for the mother, and far better results for the child, would be obtained by subjecting the patient to the second stage of labour and resorting, if necessary, to Caesarean section. Kleinwächter thought the operation should be abandoned except when the child was abnormally large or there was undue prolongation of pregnancy. In the Queen Charlotte's Hospital records of 10,000 labours there were 206 inductions; there was no maternal mortality, but 26 infants did not survive, a 12.6 per cent. foetal mortality. Professor Briggs had recorded, in 1922, a series of bougie inductions in minor degrees of contraction with an 8 per cent. foetal and neonatal death rate. Most authorities believed that the child required greater care than a full-time child, and that the ultimate chance of life of the premature infant had to be carefully considered. Prophylactic induction was most likely to be successful when pregnancy had reached the thirty-sixth week and the conjugate of the brim measured at least 3½ in. Some thought labour should not be induced in a first pregnancy, but with a history of previous difficulty or loss of the child induction might be performed. The proper time had to be

determined by the estimation of the relation between the size of the pelvis and that of the foetal head, and the operation performed as soon as there was difficulty in pushing the head into the pelvis. A general anaesthetic was given and the vagina was douched with 1 in 2,000 mercury biniodide lotion; a toy balloon (as recommended by Professor Lowry of Belfast) was introduced with bullet forceps through the cervix. The balloon could be boiled, and so the risk of sepsis was less than with a gum elastic bougie, which could not be so efficiently sterilized. The membranes were not ruptured, and the risk of this happening was small; there was no interference with a normally situated placenta. The toy balloon was easy to insert, and there was no need of preliminary dilatation; it was distended with not more than 16 oz. of sterile water introduced with a piston syringe; the tubing was tied, and a gauze pack was left in the vagina.

The present investigation comprised 72 consecutive cases (with the exception of one case reported elsewhere), which were under observation during the years 1923 and 1924 at the Liverpool Maternity Hospital and Maternity Home; 30 were primigravidae, 42 were multigravidae. In 65 cases delivery was effected naturally, while 7 were delivered by Caesarean section. In these 65 cases the average period of gestation was thirty-eight and one-fifth weeks. The average weight of the children was 6 lb. 12 oz., and the average length 19.2 in. The average time from induction until pains began was 2 hours 47 minutes in the primigravidae and 3 hours in the multigravidae, if two cases were excluded where this time was much prolonged (110½ hours and 183½ hours). The average time from induction until delivery was 29 hours 17 minutes. The indications were: a minor degree of pelvic contraction in 63 cases, post-maturity and large foetus in 6 cases, and maternal disease in 5 cases. In 41 cases there was a minor degree of general contraction, the diagonal conjugate averaging 4.4 in. In 22 cases there was a minor degree of flattening, the diagonal conjugate averaging 4.3 in. Natural delivery resulted in 52 cases, delivery by forceps was performed in 9 cases, breech extraction in 4 cases, and Caesarean section in 7 cases where the head remained above the brim when the cervix was fully dilated. All the mothers survived. There were 74 infants (twins born on two occasions); 72 were born alive. Of the two stillbirths one was a hydrocephalic monster, and the other had been a pelvic presentation in a primigravida in which there was difficulty with the after-coming head. The neonatal deaths were due to (1) meningitis (fourth day), (2) diarrhoea and vomiting (twelfth day). All the infants but 4 (5.4 per cent.) left the hospital alive. Of the 70 living infants 58 had been traced, of whom 55 were alive, 3 having died in the first year. Only one case was complicated: delivery had been effected by high forceps, and the temperature remained high for a few days, but ultimately this patient made a good recovery. Miss Ivens claimed that by the induction of premature labour in suitable cases a considerable amount of suffering from prolonged labour due to minor pelvic contraction might be avoided, and she believed that this operation was not so inimical to the child as published statistics maintained.

Operative Treatment of Chronic Endocervicitis.

Dr. J. W. BURNS (Liverpool) read a note on the end-results of the operative treatment of chronic endocervicitis. The operation, which he had described to the society in 1922, consisted in the removal of the eroded area of the cervix together with the lower half or two-thirds of the cervical canal—namely, the infected portion—as devised by Sturmdorff. The immediate results were excellent—the vaginal discharge, backache, and profuse leucorrhoea disappeared, and the patients' general health rapidly improved. To investigate the effect of this operation upon subsequent conception, pregnancy, and labour, Dr. Burns collected cases which had been operated upon during 1922 and 1923, and endeavoured to follow them up. The total number of cases in which pregnancy might have been expected to occur was 65. Of these, 14 became pregnant within a period varying from two months to two years following the operation (21.5 per cent.). The average age of these patients at the time of operation was 35 years. Of the 14 patients 1 became pregnant twice within the two years, and 13 once, so producing 15 pregnancies; of these 15 pregnancies 10 went to full term, 3 terminated in miscarriage, and 2 were expecting confinement. Labour in the 10 at full term was natural. In 9 of the 14 cases dealt with there had been periods of sterility varying from two to eight years preceding the operation. Dr. Burns held that not only did the operation bring about rapid and permanent cure of the endocervicitis, but also that it had little effect in preventing conception, and that a normal labour might be expected at full term.

Disease of the Urethra.

Dr. W. FLETCHER SHAW (Manchester) described a case of double urethra with an epithelioma arising from one orifice. The patient, 42 years of age, had had recurrent flooding during the last four years. Dr. Shaw found she had a retroflexed uterus with a hard polypus half-way up the vaginal wall. Under an anaesthetic no malignancy was found in the body of the uterus or cervix, but an epithelioma, the size of a threepenny piece, was discovered on the anterior edge of the urethra. About half an inch to the right of this urethral orifice another opening was found, when a probe was passed through it, to enter the bladder and meet the other urethra, half an inch from the surface.

Dr. D. DOUGAL (Manchester) read notes of two cases of acute prolapse of the urethra occurring in elderly women. In each the onset was sudden, with acute pain and the desire to micturate frequently. In one case a small amount of blood was passed for a few days. On examination each presented a dark red swelling protruding from the urethral orifice, and it was thought that a carcinoma of the urethra might be present. Under anaesthesia the prolapsed portion was removed by circular incisions and the edges of the skin and mucous membrane brought together with catgut sutures; in each case the recovery was good. Histological examination showed that there was no malignancy, but that the tissue consisted of urethral mucous membrane with extensive haemorrhage and thrombosis. Acute prolapse of the urethra was generally met with in children and elderly women, and only occasionally in women during active middle life. Senile changes caused shrinkage of the vulval tissues, and the urethral orifice became more relaxed and the connexions of the mucous membrane less secure. The diagnosis was usually easy, and treatment, as in these two cases, had given the best results.

Mr. MILES H. PHILLIPS (Sheffield) described three cases of prolapse of the urethra. The first occurred in a girl of 8, and was apparently caused by riding an adult's bicycle; the second, in a unipara of 26, three months after a confinement; and the third in a spinster of 56, who had had symptoms of chronic urethritis for some years. In all three cases the oedematous prolapsed mucous membrane was nearly an inch in length. Excision and restoration of the mucous canal was effected as Dr. Dougal had described.

Clinical Cases.

Dr. D. DOUGAL (Manchester) showed a specimen of primary carcinoma of the vagina removed from an unmarried woman, aged 26, who had had two children, the second two years previously; the only symptom was irregular haemorrhage of three weeks' duration. The specimen consisted of the uterus, appendages, and upper two-thirds of the vagina. The vagina contained a large fungating growth arising from the posterior wall, and reaching to the posterior lip of the cervix; histological examination showed it to be a squamous carcinoma. Its removal was easy as the growth was not adherent to the rectum in any way. Dr. Dougal also showed a pyometra associated with submucous uterine fibroids. The specimen consisted of the uterus and appendages removed by total hysterectomy, from a patient aged 55, six years after the menopause. The cavity of the uterus was dilated and filled with a large quantity of stinking pus. In the neighbourhood of the internal os were two pedunculated submucous fibroids, which had evidently blocked the cervical canal and led to the retention of the uterine secretions.

Dr. W. FLETCHER SHAW (Manchester) reported a case of normal pregnancy and labour after removal of twenty-three fibroids by myomectomy in a patient 40 years of age.

Reviews.

CANCER.

THE educational aspect of the cancer problem is dealt with in two books we have recently received—one by a past President of the British Medical Association, Mr. C. P. Childe of Portsmouth, and the other by Mr. H. W. S. Wright of Shantung, China.

Mr. CHILDE's book is entitled *Cancer and the Public*,[1] and is dedicated to the public. His object is to explain in simple language what surgeons and scientists know about cancer, and to emphasize the fact that thousands of lives are lost each year because patients suffering from cancer do not consult a doctor early enough. In 1906 he wrote a book, one of the earliest of this type, called *The Control of a Scourge, or How Cancer is Curable*, which was so much appreciated that Mr. Childe was pressed to address himself once more to the general public. The second book, still inspired by the same aim, is a fuller exposition of the subject under a new title. The reason for this change of name is evidence in itself that educational propaganda is bearing fruit, for Mr. Childe tells us that he had chosen the title "Cancer and the Public" for his former book, but the publishers were unwilling to agree to this, because, they said, the public would be afraid to read it. That was in 1906: in 1925 it appears that publishers show less timidity, and are not adverse to the author's choice of title. We predict that *Cancer and the Public* will not be handicapped, but rather prospered, by its outspoken designation.

Mr. Childe has proved by his arresting statistics that a book such as this is needed. In the chapter on the conditions of cure of cancer he takes each manifestation of malignant disease, and, quoting the figures of different hospitals, illustrates what a high proportion of patients with cancer only seek surgical aid when the time for surgical cure has passed. Thus, speaking of cancer of the rectum, he quotes the figures of St. Mark's Hospital, London, which prove that 83 per cent. of cases of cancer of the rectum are inoperable when first seen by the surgeon. We find but little more enlightenment amongst the non-hospital class, for an eminent rectal specialist in London admits that 50 per cent. of his private patients suffering from rectal cancer, when first seen, have passed beyond the stage when surgery can hold out any hopes of cure. Similar figures are given for cancer of other regions of the body.

Mr. Childe hopes that his words will reach to his medical and surgical colleagues also. How far have doctors done their duty by telling patients what medical science has discovered about cancer, by educating them to its earliest signs, and by warning them of the dangers of delay? The majority of the profession are acquainted with the ideas presented in such compelling fashion in this book, but the author declares "that there is not sufficient general conviction to impart the necessary 'ginger' to get a move on." Mr. Childe's missionary enthusiasm is calculated to "ginger up" the most Laodicean practitioner: it will also equip a new recruit with an aggressive armamentarium of facts and figures for a local educational campaign.

The other book, *The Conquest of Cancer*,[2] by Mr. H. W. S. WRIGHT, M.S., F.R.C.S., is one of the little series of scientific essays, "To-day and To-morrow," and keeps company with *Daedalus*, *Icarus*, and *Callinicus*, to which we have recently referred. It aims at telling the public what it ought to know about cancer: this object the author may be said to have achieved, though he does not beguile us on the road with the flights of imagination and literary wiles which have graced preceding members of this little series of books. His argument leads up to the conclusion that—

"If all persons over 40 years of age were routinely examined once every six months to see that they had not cancer, or a pre-cancerous condition, and if these, when found, were promptly dealt with, then cancers of the rectum, tongue, lip, breast, skin, and uterus would cease to be the plagues they are at present."

Here Mr. Wright rather weakens his case by overstatement. Perhaps after reading this a few anxious people may direct their steps towards the consulting room, but the more robust will have neither time nor inclination for such a general inspection until led to suspect that something is amiss. What people need to know is how cancer begins, and the sort of apparently trivial things they ought to ask their doctor about. Mr. Wright's methods would fill the consulting rooms of the psychotherapist more certainly than those of the physician. We are bound to say also that the introduction by Dr. CROOKSHANK, which occupies more than a third of the book, strikes an alarmist note.

[1] *Cancer and the Public.* By Charles P. Childe, B.A., F.R.C.S., M.R.C.P.E. London: Methuen and Co., Ltd. 1925. (Demy 8vo, pp. 257. 10s. 6d. net.)

[2] *The Conquest of Cancer.* By H. W. S. Wright, M.S., F.R.C.S. Introduction by F. G. Crookshank, M.D., F.R.C.P. London: Kegan Paul, Trench, Trübner and Co., Ltd.; New York: E. P. Dutton and Co. 1925. (4¼ × 6½, pp. 86. 2s. 6d. net.)

THE PITUITARY AND PINEAL BODIES IN EARLY LIFE.

THE title of Dr. LEREBOULLET'S little book, *Les Syndromes Hypophysaires et Epiphysaires en Clinique Infantile*,[3] is one that perhaps requires a little explanation. It deals with the clinical conditions produced by disorders of the pituitary and pineal bodies, either tumour growth or abnormal functioning; and not merely in infancy but throughout the early period of life when growth is the dominating tendency, and when disturbance in growth can assume various and remarkable forms.

Dr. Lereboullet is well qualified to deal with the subject, in that he has already contributed numerous and important papers to its literature. In the volume before us he gives a brief review of the present state of knowledge and opinion regarding the pituitary and the pineal glands. The subject has raised obscure and complicated questions, and a very large literature has now accumulated. But the author brings to his essay the characteristic French gifts of lucidity and order, and he has provided what is both an admirable introduction to, and a review of, the subject. Approximately the same space is devoted to the pituitary as to the pineal gland; in each subject we are given first an account of the anatomy and microscopic structure; this is followed by an account of the results of operative interference and removal in animals, and then at greater length we have a relation of the various clinical entities in the period of childhood and adolescence that have come to be associated with tumour growth and disturbed function of these glands. These clinical conditions are indeed rare, but are remarkable and interesting. The principal clinical features of juvenile acromegaly, gigantism and dwarfism, obesity with or without retarded sexual development, precocious puberty, and diabetes insipidus are described, and a few illustrative cases are cited where the clinical data were found on *post-mortem* examination to be definitely associated with morbid conditions of the hypophysis and epiphysis. Treatment, both operative and by glandular extracts, is also discussed.

[3] *Les Syndromes Hypophysaires et Epiphysaires en Clinique Infantile.* Par Dr. Pierre Lereboullet. Paris: J. B Baillière et Fils. 1924. (Imp. 16mo, pp. 138; 13 figures. Fr. 7.)

THE PUERPERIUM.

THAT a second edition of Dr. LONGRIDGE'S little book, *The Puerperium*,[4] should be called for proves that it has fulfilled the purpose for which it was intended. The book is designed primarily to assist the inexperienced practitioner in the successful management of his puerperal patients, but the author also addresses much wise counsel to midwives. The book is full of useful little tips which, while they do not find a place in a textbook, are nevertheless of considerable practical importance, and his advice throughout bears the obvious stamp of much clinical experience.

The author very concisely covers the whole of the lying-in period, including the care of the infant, advice as to feeding, and so on. Incidentally, Dr. Longridge pleads for an extension of the actual lying-in period to include at least three weeks' rest in bed—a prolongation which,

[4] *The Puerperium.* By C. Nepean Longridge, M.D., Ch.B.Vict., F.R.C.S.Eng., M.R.C.P.Lond. Second edition. London: Adlard and Son and West Newman, Ltd. 1924. (Cr. 8vo, pp. ix + 280. 6s. 6d. net.)

though having much to recommend it, will not, it is to be feared, make such a wide or attractive appeal to the mothers as it might to their attendants. The advice given is thoroughly sound and eminently practical throughout, and should prove of great service to those for whom it is intended.

NEW BOOKS ON CHEMISTRY AND PHYSICS.

RECENTLY we have received a number of books on chemistry and physics, some written from the purely scientific and some from the applied point of view. Amongst the former we note with pleasure that the important book by Professor HAAS of Vienna has been translated into English by Mr. T. VERSCHOYLE, and appears under the title of *Introduction to Theoretical Physics*.[5] As Professor DONNAN points out in his foreword, the time has passed when a scientific worker is adequately equipped with a book on "heat, light, sound, and a little electricity," garnished with nothing more piquant than quadratic equations. Dr. Haas's book is a masterpiece on the principles of mathematical physics. It is based on lectures delivered at the Universities of Leipzig and Vienna, the author's object being to combine classical and modern physics into one united whole.

The third volume of a *System of Physical Chemistry*, planned by Sir William Ramsay and Professor Donnan, is a book by Professor W. C. McC. LEWIS on the quantum theory. It is intended for advanced students of physics, and deals with some physicochemical applications of the principles of statistical mechanics. First published in 1916, the present third edition[6] has been entirely revised and largely extended.

Elementary Physics,[7] by Mr. G. STEAD, reader in physics at Guy's Hospital Medical School, is an introductory textbook for medical students and first-year university science students. It is intended for use in connexion with a course of lectures, accompanied by practical demonstrations on the lecture table, for it leaves out practical details of the experiments described, on the ground that these should be learnt in the laboratory. The author has had several years' experience in teaching medical students, and this book should be very useful as a guide to the preliminary medical examinations.

Outlines of Organic Chemistry,[8] by Mr. E. J. HOLMYARD, head of the science department of Clifton College, begins with history, methods of analysis, and elementary theory, passes on to more advanced theory, aliphatic compounds, and leads up to carbocyclic and heterocyclic compounds. It represents what the author is accustomed to teach senior boys and medical students: it is written in an interesting way and adorned with five photographs of illustrious chemists.

A Manual of Practical Chemistry for Public Health Students,[9] by Dr. A. W. STEWART, is a small book especially arranged for those studying for the D.P.H. Eleven years have passed since the appearance of the first edition, and the experience of this period has persuaded the author that nothing can be expressed too simply for the guidance of students. Dr. Stewart appears to have taken a good deal of trouble not to incorporate anything that is not absolutely necessary for the practical chemistry exercises of D.P.H. students.

The French textbook *Précis de Chimie Physique*,[10] written by Dr. H. VIGNERON, covers the whole ground of physical chemistry. Though not addressed especially to medical readers, this book would certainly be useful to doctors or students looking for a straightforward account of the principles and laws of physical chemistry.

The second volume of *Pharmacodynamie des Colloïdes*,[11] by Dr. W. KOPACZEWSKI, deals with protein therapy and the transfusion of blood. We group it under the head of books on chemistry and physics because the author concludes that the introduction into the circulation of different proteins always causes a disturbance of colloid equilibrium, especially in the blood cells. This conclusion is based, not on symptomatology, but on an analysis of the biological modification of body fluids and their physicochemical properties. The book includes an extensive bibliography.

ANNALS OF MEDICAL HISTORY.

THE first article in the winter number of the *Annals of Medical History*[12] is by Dr. Eli Moschcowitz on the first editions of Sir Thomas Browne's works, and is well illustrated by portraits in the text and by one of the Knight of Norwich on the cover. The frontispiece of the number represents Samuel Thomas von Sömmering (1775-1830), whose life and work are sketched by Dr. Theodore H. Bast of Madison, Wisconsin. Inspired in his student days by Wrisberg and Blumenbach with enthusiasm for research, von Sömmering had great difficulty in inducing his father to supply him with funds sufficient for his education, but his successful thesis opened the paternal purse, and it is thought excited the jealousy of Wrisberg, who did not exert himself to obtain a professorship for his able pupil. However, after a visit to England, where in 1778 he sat at the feet of John Hunter in London and Alexander Monro in Edinburgh, he became professor of anatomy at Kassel, and five years later moved to Mainz, where he began a lifelong friendship with Goethe; there he brought out his famous handbook on anatomy in five volumes, and incidentally a paper, which aroused much criticism, on "The Organ of the Soul," dedicated to Kant, who, though a great admirer of his previous work, had nothing favourable to say about this one. After vicissitudes due to the French occupation of Mainz, he settled for a time in practice at Frankfurt, and in 1805 became Geheimrat and member of the Academy at Munich, where eventually he ended his days in great honour. Lieutenant-Commander W. M. Kerr of the Medical Corps of the United States Navy describes the life of W. M. Wood (1809-1880), the first surgeon-general of his service, with numerous excerpts from his writings and letters. In his interesting biographical history of physical diagnosis Dr. W. S. Middleton traces the subject from Hippocrates to Austin Flint (1812-1886), who was called the American Laënnec by Samuel D. Gross. A scholarly article by Dr. M. A. van Andel of Gorinchem, Holland, on "The Ceraunia or Thunder-axe: its use in Folk Medicine," shows that prehistoric flint implements are still regarded in some parts of Europe as of celestial origin and due to lightning, and are believed to have curative properties. In an essay on "Rabelais a physician" Dr. Isador Coriat of Boston, Mass., contends that this unique genius, who was primarily a man of letters and a medical man by the way, represents our own uncensored selves, and that he wrote as he thought, whereas most people when writing are constantly censoring their conscious and unconscious thoughts on account of the external pressure of social repression and custom. Dr. Charles Greene Cumston, now of Geneva, contributes some historical notes on small-pox and inoculation, showing that at one time paralysis was a sequel of variola. Dr. W. G. Aitchison Robertson's article on Andrew Boorde's *Breviarie of Health* contains some curious information and incidentally mentions that this sixteenth century author died in the Fleet Prison, to which he had been removed "on its being discovered that he had kept a brothel for his brother-bachelors." The last original article on the careers and contributions to science and education of the two Seguins of New York, Edouard and Edward C., father and son, is by Dr. Charles L. Dana. This, the concluding,

[5] *Introduction to Theoretical Physics.* By Arthur Haas, Ph.D. Vol. I. Translated from the third and fourth editions by T. Verschoyle, M.C., B.Sc., A.R.C.S. Foreword by Professor F. G. Donnan, F.R.S. London: Constable and Co., Ltd. 1924. (Demy 8vo, pp. xiv + 331; 57 figures. 21s. net.)

[6] *A System of Physical Chemistry.* By William C. McC. Lewis, M.A. (R.U.I.), D.Sc.Liv., F.Inst.P. Third edition. In three volumes. Vol. III. Quantum Theory. Textbooks of Physical Chemistry. London and New York: Longmans, Green and Co. 1924. (Demy 8vo, pp. x + 407; 24 figures. 15s. net.)

[7] *Elementary Physics.* By G. Stead, M.A. London: J. and A. Churchill. 1924. (Demy 8vo, pp. xiv + 453; 288 figures. 10s. 6d. net.)

[8] *Outlines of Organic Chemistry.* By E. J. Holmyard, M.A., F.I.C. London: E. Arnold and Co. 1924. (Cr. 8vo, pp. xi + 468; 6 plates. 7s. 6d. net.)

[9] *A Manual of Practical Chemistry for Public Health Students.* By Alan W. Stewart, D.Sc., A.I.C. Second edition. London: J. Bale, Sons and Danielsson, Ltd. 1924. (Cr. 8vo, pp. 82; illustrated. 5s. net.)

[10] *Précis de Chimie Physique.* Par H. Vigneron. Paris: Masson et Cie. (5½ × 8¼, pp. xii + 408; 117 figures. Fr. 30.)

[11] *Pharmacodynamie des Colloïdes.* Par W. Kopaczewski. Tome II. Proteinothérapie et Transfusion du Sang. Paris: G. Doin. 1925. (Cr. 8vo, pp. xii + 331; 2 portraits. Fr. 12.)

[12] *Annals of Medical History.* December, 1924. Vol. vi, No. 4. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber; London: Baillière, Tindall and Cox. 1924. (8½ × 12¼, pp. 363–495; illustrated. Subscription in Great Britain, £2 2s. for four numbers.)

number of the sixth volume of the *Annals of Medical History* contains most interesting material, and deserves, for its admirable printing, illustrations, and style, widespread support from medical readers.

NOTES ON BOOKS.

DR. E. F. CYRIAX'S *Collected Papers on Mechano-Therapeutics*[13] are written in English, French, or German, and were contributed to various medical journals, sometimes jointly with Dr. A. Kellgren Cyriax, Dr. R. J. Cyriax, or Dr. Stanley Melville. These methods of manual treatment appear to have originated with P. H. Ling in Sweden about 1835, but were modified by Henrik Kellgren, of the Royal Gymnastic Central Institute in Stockholm, after he had settled in Gotha as a medical gymnast in 1869. According to Dr. Cyriax, it was Kellgren who assigned particular value to the mechanical treatment of the nerves, and extended the treatment to acute febrile conditions for which Ling considered his own form of treatment unsuitable. Kellgren had a great vogue in the seventies and eighties of last century; he established an institute in London, and ultimately founded others at Norderney, Baden-Baden, and Paris. Dr. Cyriax has treated by Kellgren's methods many nerve diseases, affections of the bones and joints, displacements of the vertebrae and the ilium, constipation, high blood pressure, diabetes, some forms of heart disease, albuminuria, and polyuria, septic wounds during the war, and even pneumonia, pleurisy, and influenza. His treatment appears to have resulted in almost invariable success, but whether this may not have been due to particularly rose-coloured spectacles in the possession of Dr. Cyriax or his patients is not clear. The manipulations and vibrations used are very gentle, and no doubt from constant practice have become most efficient. But we have grave doubts about the routine treatment of pneumonia in this way; at all events, by anyone less skilled in the art than Dr. Cyriax. Apart from the feeling we have that in acute febrile conditions the patient dislikes being disturbed, we are doubtful of the physiological results enumerated by Dr. Cyriax. The book is profusely illustrated with many excellent photographs.

The fact that Professor H. A. HARE'S *Textbook of Practical Therapeutics* has now reached its nineteenth edition[14] is an indication of its well established popularity. The last edition appeared in 1922. The general arrangement of the volume remains unchanged, but the text has been altered extensively. The author points out in his preface that progress in therapeutics is much wider and more rapid than is generally realized, and remarks that the changes in the past three years have necessitated more extensive alterations and additions in his book than have been required in any previous edition. The first half of the book consists of brief descriptions of the pharmacological actions of many hundreds of drugs disposed in alphabetical order. The value of these summaries varies considerably, and some of the statements would not find general acceptance in this country. The section on remedial measures other than drugs is particularly interesting. The latter half of the book is an index of treatment of disease, and gives a short account of the treatment of all the chief diseases. The book is well illustrated with line drawings, photographs, and coloured plates.

The first volume of the second edition of the handbook of internal medicine, originally edited by Professor L. Mohr of Halle and Professor R. STAEHELIN of Basle, has recently been published in Berlin.[15] Professor Mohr died in 1918, and has been succeeded by Professor G. VON BERGMANN of Frankfort as co-editor. Of the other contributors to the first edition a quarter have died. In the previous edition only one volume was devoted to infectious diseases, but owing to the great increase in our knowledge of this subject since 1911—the date of the first volume of the first edition—only twenty-three infectious diseases are discussed in the present work; the remainder are to be considered in the second volume. Professor F. Rolly of Leipzig and Professor E. Müller of Marburg, who are the only two surviving contributors to the corresponding volume of the first edition, have revised their articles on the acute exanthemata and epidemic poliomyelitis respectively. A new section in the former article is devoted to erythema infectiosum. Professor R. Massini of Basle contributes the chapters on influenza and herpetic fever, which were formerly the work of Professor P. Krause of Bonn. The articles on whooping-cough and mumps, which were also previously written by Professor Krause, are now from the pen of Professor M. Klotz of Lubeck. The chapter on diphtheria, previously written by Professor Krause, has been entrusted to Professor F. Göppert of Göttingen, who is also responsible for the chapter on cerebro-spinal fever, which had previously been written by Professor Jochmann. The chapter on cholera is now the joint work of Professor H. Elias of Vienna and Professor R. Doerr of Basle. The new articles in the volume are those on epidemic encephalitis by Professor Staehelin of Basle and Professor W. Loeffler of Zürich, and on infectious jaundice, trench fever, and serum disease and anaphylaxis by Professor A. Schittenhelm of Kiel, who also deals with tetanus and typhus fever, previously discussed by Professor Krause, and with the dysenteries, for which Professor Jochmann was previously responsible. The book, which is well printed and illustrated, will be found useful for reference by those familiar with the German language.

[13] *Collected Papers on Mechano-Therapeutics.* By Edgar F. Cyriax, M.D.Edin. London: John Bale, Sons and Danielsson, Ltd. 1924. (Cr. 4to, pp. xiv + 472; 126 figures. 12s. net.)

[14] *A Textbook of Practical Therapeutics.* By H. A. Hare, B.Sc., M.D., LL.D. Nineteenth edition, enlarged, thoroughly revised, and largely rewritten. London: Henry Kimpton. 1925. (Med. 8vo, pp. x + 1061; 155 figures, 8 plates. 36s. net.)

[15] *Handbuch der inneren Medizin.* Zweite Auflage, herausgegeben von G von Bergmann und R. Stachelin. 1 Band. 1 Teil. Infektionskrankheiten. Berlin: Julius Springer. 1925. (Roy. 8vo, pp. xii + 717; 232 figures. G.M.45.)

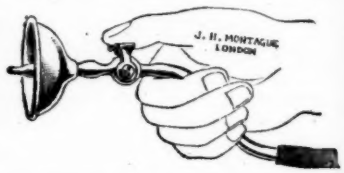
MEDICAL AND SURGICAL APPLIANCES.

Nitrous Oxide Inhaler.

MR. FRANKIS EVANS writes: The apparatus illustrated is a modification of Paterson's nosepiece for the administration of nitrous oxide. The nosepiece is the same shape as the original, and has a wide and deep rubber pad. In my experience it fits noses of all shapes very well. The mouthpiece is connected to the nosepiece by a stout rubber tube, and can be swung round to the back. This movement cuts off the supply of gas to the mouthpiece by closing a valve at the top of the nosepiece. When not in use the mouthpiece rests on the head-rest of the chair, and the whole apparatus is then held quite firmly to the nose by the weight of the gas-bag hanging behind. On the nosepiece is an expiratory valve of the hairspring type, which does not stick as the rubber flap type may. A rebreathing position is afforded by turning the tube carrying the expiratory valve through an angle of 45 degrees. The apparatus has been made by Messrs. Coxeter and Son, Ltd., 171-175, Pancras Road, N.W.1.

Urethral Irrigators.

Mr. W. K. IRWIN, surgeon to out-patients, St. Paul's Hospital for Genito-Urinary Diseases, writes: The irrigator depicted differs slightly from those in ordinary use. Its main feature is the shape of the stem, which is curved instead of straight. The curved stem forms a convenient handle, and the instrument is so much easier to use than those of the ordinary type that it is difficult to believe that, as I am told, it has not been made before. Further advantages are that the curvature prevents the irrigator from rolling about when placed on the table and minimizes the risk of the rubber tube kinking at its junction with the metal part. Extra elevation of the container will readily compensate for any loss of force in the stream due to the curve. The flow is cut off when the stopcock is at right angles to the stem; this makes it easy to remember which position is "on" and which is "off." Both the shield and the nozzle fit tightly on to the stem, but are easily removable for sterilization. The nozzle can be inserted into the funnel-shaped end of a gum-elastic catheter, so that the instrument is convenient for washing out the bladder. It has been made in accordance with my instructions by Mr. Montague of New Bond Street.



An Arm-sling.

The Euphoros arm-sling has been designed by Miss I. M. RANGEL to obviate the strain on the neck caused by the usual form of arm-sling and to allow the maximum amount of freedom to the elbow- and shoulder-joints, while giving perfect support to the forearm. A curved backpiece is attached to a waist belt. Straps of webbing start from its upper points, and, passing over the shoulders, are connected by buckles with the sling for the forearm, which can thus be easily adjusted to the required height or angle by the patient himself. The sling has a perfectly level base; a gusset at the elbow covers the end of the splint, and rest for the arm is obtained without the sense of carrying weight. It is made of a light and durable black material, and can be obtained from Squire and Sons, Ltd., 413, Oxford Street, London, W.1, price 10s. 6d.

Nova et Vetera.

LIMBS AND BRAIN.

THE consideration in the JOURNAL last year (January 12th, 1924, p. 79) of the case of a man without arms, and of the success with which the legs and feet may be trained to take on themselves the functions of the missing limbs, prompts the question to what extent and in what manner life is possible for individuals born without limbs of any sort, or possessing, at the most, rudimentary stumps too short and too little differentiated to be prehensile. An answer to this question is contained in the very full and active life of the Right Hon. Arthur MacMurrough Kavanagh, M.P., who took a considerable part in the public affairs of his time, and whose remarkable achievements surpassed even those of Ducornet (a pupil of Watteau), to whom reference is made below in the note on Mrs. X——. The following brief account of Mr. Kavanagh will give some idea of the manner in which he overcame his physical disabilities.

MR. ARTHUR KAVANAGH.

Reproduced by permission of Messrs. Macmillan and Co. from "The Right Honourable Arthur MacMurrough Kavanagh," a biography compiled by his cousin, Sarah L. Steele. 1891.

MR. ARTHUR M. KAVANAGH.

Born with the merest rudiments of limbs, Mr. Kavanagh overcame every difficulty that presented. At the age of 16, strapped upon the saddle of his horse, he rode a long tour through the Near East. His elder brother, who accompanied him, writes home: "Arthur shoots much better than Mr. Wood, who began about the same time that he did, and can hit a bird flying quite well. His shooting is quite as wonderful as his riding. He is the only one of the party who can speak Arabic, which he does perfectly." (*Life of A. M. Kavanagh*, Macmillan and Co., 1891, p. 26.) Later on in India he shot tiger. At 23 years of age he succeeded to the family estates, and in the next year, 1855, he married. When 37 years old he was returned to Parliament as member for County Wicklow. In the troublesome Irish politics of his day he played an important part until his death in 1889. His *Life*, published two years later, is reticent as to his physical disabilities and the means by which he overcame them. Of his childhood nothing is told us in detail. His friends and intimates are now a diminishing band. Mrs. Rees-Mogg, who as a young girl knew him well, has been good enough to send us the following reminiscences:

"Mr. Kavanagh was the fourth son. He married a cousin. He rode up most days to see my people at Mt. Leinster. He had a sort of seat like a chair strapped to the horse. He held the reins wrapped round his arm. One arm was a little longer than the other, finishing a little below the elbow-joint; the other arm was thinner and smaller and ended above the elbow. He held the whip under one arm and the reins were twisted round the other. He wore a long skirt, and his legs did not come as far as the knee. I rode with him often, and sat behind him on the horse, holding on to the belt which he had round him somehow attached to the reins. Of course, I rode sideways.

"He wrote putting his two stumps together and so held the pen, taking it between his teeth to dig into the ink.

"Every morning when you came down there was Mr. Kavanagh sitting by a table in the window with a Bible before him, and read prayers. He used to jump on to his servant's back, who stooped for him to jump on to. He used to help the soup at dinner and pour out the coffee at breakfast. He was so absolutely charming and attractive that all the young lady guests used to fight as to who should sit next him. My sister and I and a friend went on a tour with him on his yacht the *Eva* (about 230 tons), which he always steered himself, being his own captain. He had his own servant with him. He used to push himself about on the clean deck on his stumps. We went to Corfu for four months. He had an aunt there who had married a Greek. Mr. Kavanagh took photographs, which he did very well. We also went to the Adriatic."

We are also indebted to Mrs. Rees-Mogg for the loan of a valentine that Kavanagh sent her when she was a child. The valentine is of quarto size, and the first page is printed on lace paper. It contains a picture of "love's barometer" mounted on satin, and assured the young lady that it was ever sunshine when she was near. On the second page Kavanagh had written some verses, of which the first two are here reproduced in facsimile. (The eagle's feather refers apparently to Kavanagh's pen.)

For many years he copied into the first page of each new diary a prayer for strength and Longfellow's "Psalm of Life."

> "Let us then be up and doing,
> With a heart for any fate,
> Still achieving, still pursuing,
> Learn to labour and to wait."

It is probable that these cases are not quite so rare as would appear from the scanty records of medical societies and medical journals. If there were a literature of the circus and of the travelling show the total of "limbless wonders" might be found to be considerable. Stow, the chronicler, makes mention of a Dutchman who, with his two arm-stumps, could keep a cup in the air, throwing it from stump to stump like a juggler, and who could shoot an arrow.

Oh bliss untold if Cupid's dart
And not the Eagle's feather
Had found a refuge in your heart
I would then be sunny weather

Oh Lizzy could a hope appear
That Love's Barometer would rise
To quell the pangs of jealous fear
Show light before one's Eyes

MRS. X——.

I have enjoyed an opportunity of making the acquaintance of the present-day representative of these limbless performers—Mrs. X——, 42 years of age. I am indebted to Dr. A. G. Phear for the introduction, and to Mr. Ulysses Williams for the *x*-ray plates here reproduced. Her infancy was very delicate, and it was long before she could sit up or pass beyond the stage of helpless dependence on others. From about the age of 8 she began to make rapid progress. From the age of 16 she has managed all her own affairs, and made her own arrangements for the tours on which she exhibits her remarkable dexterity. She writes a clear flowing hand, makes her own clothes, knits, crochets, dresses her own hair, and threads the rings of her earrings in and out of her pierced ears. In the house she pushes herself up and down stairs without assistance, and is active in domestic work. The adductors of the arm-stumps are

of very great power, and the neck muscles similarly are much hypertrophied. The handiwork which she does with such pride and delight is accomplished with the two arm-stumps, each with a single projecting rudimentary digit, while meeting and opposing them, with innumerable rapid perfectly co-ordinated movements, are chin, lips, and sometimes tongue or teeth. The left arm is about six inches long, the right about four inches; the right leg ends about the knee, the left is a mere rudiment. The pen is held fast against the chin by the pressure of the left stump of arm, which is considerably more dexterous than the right, and the movement is imparted almost entirely by the action of the neck muscles. Watching the quick, clever movements of this woman makes less incredible the achievements of Watteau's pupil, Caesar Ducornet, who was born without arms and with only rudimentary legs; yet he carried off all the prizes at Lille, won gold medals at Paris, and had pictures at the Louvre.

Mrs. X——: the rudimentary left humerus and digit.

CASES RECORDED IN MEDICAL LITERATURE.

The medical literature concerning such cases is strangely scanty. It is possible that some references have been overlooked, for search has brought to light only the following cases.

Hastings reports the case of a male child born with the merest rudiments of limbs, under the title "Description of a monster in whom the upper and inferior extremities were entirely awanting." Only in place of the left leg was there a rudimentary projection. "On the left side, at the part of the ossa innominata into which the head of the thigh bone is generally received, there is a little process in the shape of a finger, consisting of two small bones united by ligaments and covered with skin and cellular membrane. This projection has muscles attached to it, as it is constantly moved by the cries and struggles of the child. The projection is thick at the base and runs to a point, and there is a nail affixed to it." "The desire of the parents," says Dr. Hastings, "to derive pecuniary advantage by exhibiting this monstrous production has proved fatal to it. They carried the child to most of the towns in this neighbourhood and exhibited it to many hundred persons. In one of these excursions inflammation of the lungs came on and the child died." Its age at the time of death was 6 months. (*Trans. Med.-Chir. Soc. of Edinburgh*, 1826, p. 39.)

Garlick reports the case of a child which survived some time with stumps of limbs which did not exceed three inches in length. (*Provincial Med. and Surg. Journ.*, 1849, p. 279.)

A similar case was reported in 1853. The child, a male aged 6 weeks, had the power of moving the stumps freely and strongly. This case appears to have been the first in which it was suggested that there had been amputation during foetal life by means of constricting bands—either amniotic adhesions or the umbilical cord—an explanation which seems unlikely in view of the presence in this case, as in that reported by Hastings, of a rudimentary toe. One speaker at the discussion alone addressed himself to this difficulty. The toe he regarded as an attempt at repair after amputation, and compared it with the formation of new limbs after traumatic loss in crabs. (*Med. Times and Gazette*, 1853, p. 604.)

Mr. (afterwards Sir Jonathan) Hutchinson reported the case of a child with all limbs reduced to mere stumps, which was alive and well at the age of 2 months. (*Trans. Path. Soc. London*, vol. v, 1854, p. 343.)

Baker Brown exhibited a 3 months old child "with short stumps replacing both upper and lower limbs." (*Trans. London Obstet. Soc.*, vol. viii, 1866, p. 102.)

Cook reported the case of a living child with all four limbs reduced to merest rudiments. (BRITISH MEDICAL JOURNAL, June 14th, 1890, p. 1360.)

Weinlechner exhibited before the Medical Society of Vienna a man, aged 27, who was devoid of all extremities except that, on the right side, a small stump of the arm had permitted the adjustment of an artificial apparatus. He could write, thread a needle, and pour water from a bottle. It is probable that the man shown on this occasion was the well known Nicolai Wassiliewitch Kobelkoff, a celebrated performer in the circus at that time. He was born at Troizk in Siberia in 1852, a fourteenth child, all his brothers and sisters being normal. He married in 1876 and had five children, all of whom were normal. Kobelkoff had the rudiments of legs, one thigh being about six inches long, the other about two inches longer, but for a right arm merely a conical mound, and for a left a rounded projection representing the humerus. With these stumps he conducted an entertainment, exhibiting in the different towns of Europe. He could fix a pen between his cheek and arm, and wrote a good clear hand. He could cut paper with scissors, pour water from a bottle into a glass, eat with a fork and spoon, take his watch from his pocket and open it, thread a needle, and fire a pistol. (*Allg. Wien. med. Zeit.*, January 22nd, 1878, p. 36. See *Boy's Own Paper*, July 2nd, 1887, vol. ix, p. 637.)

Sarah Biffin, who also showed herself at fairs, and whose name may be seen on one of the show boards in Rowlandson's picture of Bartholomew Fair in 1799, later also achieved celebrity as a miniature painter. She died in 1850. Recently one of her miniatures realized forty guineas at Puttick and Simpson's auction rooms (see *John o' London's Weekly*, November 8th, 1924).

Mrs. X——: the rudimentary lower extremities.

The lessons to be drawn from such cases are obvious enough. The brain, so long as its quality is unimpaired, may achieve great results, however ill adapted seemingly the appliances with which it has to work. So long as somehow and by some means the body can achieve the mobility necessary to acquire and refine sensory impressions the loss of the specialized limb is compensated. It seems as if sensorimotor autoeducation would be impossible only if we could suppose a state of limblessness combined with an ankylosis of the cervical spine.

The slightest cerebral defect or damage is productive of incapacity immeasurably greater than that entailed by the almost complete absence of all four limbs. Oliver Wendell Holmes declared that some special Providence watched over and inspired Helen Keller in her conquest of blindness and deafness. So with Kavanagh. The immensity of the difficulties of his task seems to have evoked and been balanced by a patience and perseverance equally great.

H. C. CAMERON, M.D., F.R.C.P.

British Medical Journal.

SATURDAY, APRIL 18TH, 1925.

APPENDICITIS.

THE new year has seen a revival of interest in what has come to be regarded as a well worn subject—appendicitis. Mr. Rendle Short's lectures[1] on the subject have been quickly followed by Mr. Sherren's contribution and the address given by Mr. J. E. Adams before the Section of Surgery of the Royal Society of Medicine. Both are printed in the opening pages of this issue, and a report of the discussion which followed in the Section will be found at page 739. Some rather alarming figures of the numbers of deaths from the disease, and the suggestion that immediate operation is not certainly the best routine treatment for appendicular peritonitis, are the stormy petrels of the moment.

It is as perfectly clear as ever it was that immediate operation is the treatment of choice during the early stages of appendicitis—that is, while the condition is still truly one of appendicitis and not yet a peritonitis, or if that, only in its earliest stages and least degrees. We trust that there will never be any misconception on that point. Owing to individual variations the time at which the one merges into the more serious other is variable, but it may be taken that peritonitis is at a minimum in the earlier hours. When this stage has been passed a certain mortality begins to creep in. Even in the early groups there is a mortality of something under 1 per cent., rising in some series even to 2 per cent., of deaths in twenty-four-hour cases. These are the fulminating cases, or, if ordinary, certain unusual complicating circumstances account for the deaths. Allowing for the small percentage of error in diagnosis by skilled clinicians which must be reckoned on in any large series of cases, it is evidently within our power to lower vastly the death rate by operating on all cases of appendicitis within the most favourable period. Were this done we should not have lost 2,826 cases in 1923, and certainly not as many as 28,000 cases (the population of a country town) in the last ten years. When we remember that these dead were mostly young people we realize what this loss may have meant. Then we have to consider the working time lost and the expense to the hospitals and to the community which those cases requiring drainage and prolonged hospitalization cause. There is the added factor of abdominal walls weakened by incisional hernias, and so forth. The general practitioner cannot be blamed for all the delay before surgical assistance is sought, for in industrial and in country areas the generalized colicky abdominal pain which is the chief feature of the early hours is often not regarded as serious enough to warrant calling in the doctor. Too often it is not until the mischief has definitely located itself in the right iliac fossa that help is sought, and this change means that the case is no longer one of obstructive appendicitis but one of appendicular peritonitis. Mr. Sherren's remarks on the symptomatology of appendicitis are very sound, and should be memorized by all who are not already acquainted with these facts. Equally true are his sentences on chronic right iliac pain, which does not denote, as is so often thought, chronic appendicitis. The diagnosis of acute appendicitis is rarely difficult, and all doubtful cases should be removed from their homes for skilled observation.

For those cases which have, for one reason or another, not been subjected to operation within the first few hours what are we to do? It is generally agreed that the mortality is highest in those patients on whom the operation is performed on the third day, and there is growing up in England a school—comparable to that of Ochsner of Chicago—which advocates starvation, morphine, and no purgation, in order to obtain absolute peritoneal rest. If the case settles down, appendicectomy is performed at the end of a week or two, when, it is hoped, a clean operation may be done with immediate closure. This late appendicectomy is not really part of the treatment of appendicitis in these instances, but is rather of a prophylactic nature. Indeed, this treatment of appendicitis is essentially non-operative, with a reservation. The reservation is that if at any time the case does not seem to be settling down operation will be undertaken at the discretion of the surgeon. The statistics of the London Hospital and of St. Thomas's Hospital show that a large number of cases do not so settle.

It must be said at once that this treatment places a great responsibility on the shoulders of the surgeon. It should never be carried out at the patient's home, and if it fails, if the patient subsequently dies after a delayed operation, considerable unpleasantness may arise. Still, if it can be proved that a lowered mortality can be obtained by this method, obviously it should be adopted. Before we trust our judgement to the tender mercy of statistics we must be sure that the cases being compared are in truth comparable, that they are true scientific controls the one of the other. Certainly much larger series of cases are needed before we can be quite certain where we are. Similarly the fact that 2,826 people died from appendicitis in 1923 and 2,528 in 1913 does not necessarily mean that we are doing worse than we did ten years ago. It may mean that, but it does not necessarily mean that. No figures are available of the total numbers afflicted, and none could be so available unless the problem were thought serious enough to require compulsory notification of appendicitis. The one fact that is clear is that even to-day, after a quarter of a century of skilled treatment and of educational propaganda, battalions of people are still dying unnecessarily from appendicitis.

Mr. Adams's objections to the "wait and see" policy are very pertinent, and we feel sure that it would be nothing less than a disaster if the method were to be employed generally out of hospital. If it is to find an established place for itself it will, we trust, remain a surgeon's treatment, a variety of institutional treatment, with a certain operation at the end of it. In other words, it is a form of pre-operative treatment, and not an end in itself.

[1] *Lancet*, January 31st and February 7th, 1925.

THE MORTALITY OF THE MEDICAL PROFESSION.

IN the *Journal of the American Medical Association* (January 10th, 1925) there appeared an interesting leading article on the deaths of physicians in 1924. Our contemporary estimated the number of practising physicians in the United States (the term "physician" is, of course, to be taken to cover all regular practitioners) to be 145,966, and, adding 2 per cent. to the recorded total to allow for possible omissions, put the deaths at 2,536, giving an annual death rate of 17.37 per 1,000. The average over the last twenty-three

years is stated to have been 16.94 per 1,000. This latter figure agrees almost exactly with that deduced from the Registrar-General's Occupational Mortality Supplement, which deals with the experience of England and Wales in 1910-12. In these three years 1,246 registered practitioners (physicians, surgeons) died, and this, brought into relation with the number exposed to risk, 73,659 (three times the enumerated population at the census), gives a rate of mortality of 16.92 per 1,000. The rate in America in 1924 was slightly worse than ours a decade ago, but the fact that five physicians were killed by bandits suggests that the practice of our art in the United States may be somewhat more hazardous than here; that ten of the deceased physicians were bank presidents is perhaps evidence that it may also be more lucrative.

We publish in this issue an analysis by Mr. A. B. Hill of the mortality amongst English physicians of a bygone age, the word "physician" being here used in a restricted sense—namely, of Fellows and Licentiates of the London College of Physicians admitted at least a hundred years ago. The longevity of these old-time doctors is much superior to that of *all* medical practitioners in our own age, and compares favourably with that of married peers of the realm in their own age; Dr. Brownlee has kindly permitted Mr. Hill to quote the data about the peers from unpublished material. In the current issue of the *Proceedings* of the Royal Society (Series A, vol. 107, p. 368) Sir Arthur Schuster has estimated the expectation of life of Fellows of the Royal Society from the data of the last seventy years. Taking as an example the expectation of life at the age of 45, we find that Sir Arthur Schuster reaches for Fellows of the Royal Society 28.4 years; Mr. Hill obtains for physicians born between 1750 and 1799 27.2 years, and Dr. Brownlee obtained for peers 26.0 years. Mr. Hill deduces from the experience of 1910-12 for *all* medical practitioners 24.7 years, and the value in English Life Table No. 8 (all males, experience 1910-12) is 23.9 years.

The bearers of the gold-headed cane come very well out of this comparison; they were, indeed, a little worse off than those who have surmounted the intellectual obstacles which have, since the number of admissions was limited, guarded the portals of the premier scientific society; but, having regard to paucity of numbers and differences in method of calculation, one cannot put much weight upon the difference. On the other hand, it is improbable that the advantage of the physicians of a hundred years and more ago over all practitioners of our time is illusory. Something must be allowed for age selection—the average age on admission as a candidate or licentiate was certainly higher than the average age of registration now; something for social class—all the Fellows in the eighteenth and most in the other centuries were graduates of Oxford and Cambridge; but, having regard to the results in the peerage, these can hardly be the whole explanation. Perhaps the truth is that the more leisured life of a physician in the eighteenth century—he probably indulged less than his lay contemporaries in the vice of hard drinking—was a quite sufficient makeweight for the superior scientific resources of his twentieth century brother in general practice. One wonders whether an investigation such as Mr. Hill has made, if extended to Fellows and Members of the Royal College of Physicians of the last fifty years, would produce similar results, and substantiate a claim for a reduction of the life assurance premiums of those who have satisfied the Censors' Board.

THE NATIONAL PHYSICAL LABORATORY.

THE activities of the National Physical Laboratory for 1924 are reported in a stout quarto volume.[1] The greater part of the research carried on at Teddington is not of a kind from which conclusive results can be expected within a particular year. Work on various international standards and scales, or along lines of research which require prolonged investigations to be repeated for one material or one set of conditions after another, has necessarily to be continued over a period which may be represented by several annual reports. While there is much to interest the reader of a scientific bent of mind in these 200 pages, there is very little in the way of absolute conclusion to be winnowed out. The mills of the National Physical Laboratory "grind exceeding small." It is hoped next year, however, to complete the work, which has been proceeding for some time, on *x*-ray protective materials, and in this connexion it is noted that recommendations on somewhat similar lines to those established by the laboratory have been drawn up by protection committees in America and in France and Germany and some five other European countries. Most of the work of the laboratory, so far as *x* rays are concerned, has been on spectrometry and other questions falling under the head of what is called "atomic physics," but the *x*-ray departments of a number of hospitals have also been inspected, and advice has been given on the equipment of proposed new departments. The new *x*-ray apparatus submitted for inspection show marked improvement both in construction and in the protection afforded. Preliminary experiments have been made with cathodes of various curvatures with a view to the design of an *x*-ray tube capable of passing extra heavy currents and of withstanding increased potentials. Radium testing has become a routine procedure at the laboratory, and institutions in which radium is in constant use are sending their tubes and applicators periodically to the laboratory for examination for leakage; 111 tests of radium preparations were made during the year. Apart from work on *x* rays and radium, the report touches here and there on matters of medical interest, although these matters are few in number in comparison with the bulk of the work of the laboratory, which embraces not only the whole field of physics, but electricity, metallurgical chemistry, and aerodynamics. A number of problems in connexion with refrigeration are being investigated by the Food Research Board. A novel apparatus has been constructed at the laboratory for controlling humidity conditions in food and other forms of storage. Nearly 700,000 clinical thermometers have been tested during the year, and it is remarked that the quality is well maintained, and that the proportion of instruments which fail to obtain approval and marking is now low. Clinical thermometers made of soft soda glass are more likely to develop defects due to the presence of air than are instruments constructed of lead or other accepted thermometric glass. Some useful work has been done in optics, particularly in colour standardization; here a suitable filter for producing a standard of white light has been evolved, and now requires only some modification in detail. Among other lighting inquiries in progress is an investigation of the characteristics of light transmission of the commercial types of window glass. Experiments, relating in the first instance to compositors, have also been carried out, in association with the Industrial Fatigue Research Board of the Medical Research Council, on the effect of illumination on accuracy and speed of work, but here again the work is at a stage at which apparently not even a provisional report can be made. All this is the most cursory glance at the activities of a great institution, with a staff of 500, engaged continuously upon a bewildering multitude of subjects, including, to take examples at haphazard, the wind resistance

[1] *The National Physical Laboratory: Report for the Year 1924.* H.M. Stationery Office, Adastral House, Kingsway, W.C. 8s. 6d. net.

of motor cars, the expansion of concrete, the properties of lenses, the thrust of propellers, the measurement of carbon dioxide, and the problems of sound. On this last subject a number of large- and small-scale tests of the absorbing and reflecting power of materials have been made, and the advice of the laboratory has been sought by various bodies—including the Ulster Government, for its Parliament House—on the acoustics of buildings.

TYPHOID FEVER IN A LONDON BOROUGH.

LATELY (March 21st, p. 563) we gave some account of an outbreak of milk-borne enteric fever in a rural district in Lancashire, and in that connexion made some observations on public health administration in rural districts. There has now come to hand a report by Dr. Geoffrey E. Oates, M.O.H. Bethnal Green, of a similar outbreak in that borough. It was tackled promptly, all modern means of investigation being brought into immediate use, yet the disease, which came under notice at the end of September, 1924, was not extirpated until the end of the year. The number of known cases was 81, and all were typhoid fever, not paratyphoid. The deaths numbered 12, or 14.8 per cent. As in the Lancashire outbreak, the spread of the infection was largely due to milk. Of 65 primary cases, 51 had milk from one dairy, and a few of the other 14 may have consumed the same milk on occasion. The first notification was on September 27th, but the milk supply of that case was not from the source implicated in the outbreak as a whole. Within a few days three more cases were intimated, all among customers of one milk dealer, and it was found that the proprietor and manager of the business was in bed on the premises, suffering from what had been regarded as an influenzal illness. The possibility of typhoid was discussed with the medical attendant, but ruled out for the time being. In two days, however, the patient was removed to the London Hospital, and there the diagnosis of typhoid fever was made. This illness had begun in the middle of September, and from the start no part was taken by the patient in the conduct of the business, though he took to bed only on September 23rd. When the early notifications were made, every one of thirteen persons resident or employed on the premises was examined by the usual tests, but without practical result. The thirteen included three roundsmen, one of whom, owing to the result of an agglutination test, came under suspicion, but examination of excreta proved negative, and, in fact, the rounds of all the three men were affected to the same extent. A veterinary examination of every one of forty-five cows also proved negative. The dairy premises, though they had no pasteurizing plant, could not be blamed for the outbreak. In spite of careful exploration of all avenues of infection that could be thought of, the ascertained facts were so puzzling as to prevent Dr. Oates from arriving at a very definite conclusion, and he submits two or three different hypotheses. Against the suggestion that the proprietor and manager might himself have been the origin of the outbreak are the facts that the source of his own infection was undiscovered, and that by the time he began to feel ill four cases had already occurred among his customers, and six others had been infected. Indeed, if he were responsible he must have been a carrier of the disease three weeks before he sickened, and also, Dr. Oates points out, he must have infected the last primary case, though that case sickened on November 12th, nearly seven weeks after the proprietor himself went to bed ill. Further, it has already been stated that the proprietor was taken to hospital early in October, so that some of the primary cases must have had a remarkably long period, if not of incubation, at least of non-infection. Another hypothesis considered is early and temporary pollution of the milk supply, which might have infected alike the proprietor and some of his customers, but there is no evidence of this. A further possibility is a continuous undiscovered source of infection all through September and October, but to Dr. Oates and those whom he consulted this seemed impossible. So firmly was this view held that Dr. Oates states that he took the responsibility for advising the borough council not to interdict the milk supply. Shellfish, greenstuff, ice cream, and fried fish were all considered, and ruled out. In the course of his summary and conclusions Dr. Oates states that the dairy proprietor "was probably the source of infection, but whether he contracted typhoid fever from his own milk supply in common with his customers or from another source is uncertain." Other points are that there was striking evidence that the nursing of typhoid by unskilled persons is dangerous; that during a typhoid epidemic all cases of continued fever should be notified and removed to hospital for diagnosis; that bacteriology contributed to the control of the outbreak; that early notice should be given of any illness in a dairy business; and that there should be systematic medical inspection of milk employees.

THE PHARMACEUTICAL CURRICULUM.

PHARMACISTS have now to bear a heavier load of responsibility than was previously the case, and consequently it has been felt for some time that changes in the education of pharmaceutical students, and in their qualifying examinations, have become necessary. New regulations introducing modifications into the three examinations (primary, preliminary scientific, and final) have now been approved by the Council of the Pharmaceutical Society of Great Britain. The new requirements for the preliminary examination prior to registration as a student provide for one language other than English to be offered, so that Welsh is now admitted. Latin is, however, not a compulsory subject, although in the final examination the student is tested in the translating of Latin prescriptions. Before entering for the second examination the student must be certified as having received an approved systematic course of instruction in chemistry of at least 200 hours, and in botany and in physics of 120 hours each. Before entering for the final examination, which enables the candidate to use the title "pharmacist" and to engage in the business of a chemist and druggist, the candidate must have received training under the supervision of a pharmacist for 4,000 hours, in accordance with the Pharmacy Acts of 1868 and 1908, including not less than two years in a chemist's shop or hospital dispensary. He must also have received an approved course of instruction of not less than 720 hours in the subjects of the examination, which include pharmaceutical chemistry, pharmacognosy, pharmacy, and forensic pharmacy. In addition to this qualifying examination for registration there exist also examinations for the title of pharmaceutical chemist, and for the new degree of Bachelor of Pharmacy, conferred by the University of London. Registration as an "apprentice" or "student" will still be possible under the old regulations until January 1st, 1927. The date up to which a candidate who has passed Part I of the qualifying examination will be exempted from the new curriculum of Part II has been extended to August 1st, 1928, so that students will be able to prepare for both parts of the examination on a nine months' course up to and including the course which begins in October, 1927. Moreover, until August, 1928, candidates may continue to enter for both parts of the examination at the same time, but they may not proceed to the qualifying examination until they have received a certificate of having passed the preliminary scientific examination. These extensions largely do away with the injustice that would have followed an earlier enforcement of the new

regulations; and, further, the President of Council of the Pharmaceutical Society has expressed the hope that it may be possible to introduce amendments of the Charter, and, if necessary, of the Pharmacy Acts, in order to obtain a more representative governing organization in place of the present consultative and advisory body.

THE CAMPAIGN AGAINST CANCER.

THE quarterly meeting of the Grand Council of the British Empire Cancer Campaign was held on April 7th, with the Lord Chancellor, Viscount Cave, in the chair. Sums amounting to nearly £12,000 in all were allocated, for the purpose of research in cancer, to the following institutions and individual workers: £3,000 to the Middlesex Hospital; £2,500 to the research department of the Cancer Hospital; £1,695 to St. Bartholomew's Hospital, for radiological research; £400 to St. Mark's Hospital; £500 to Dr. Thomas Lumsden of the Lister Institute; and £300 to Dr. Malcolm Donaldson of St. Bartholomew's Hospital to facilitate research into certain forms of inoperable cancer. A further sum of £1,400 was granted to the Middlesex Hospital for special radiological research, subject to confirmation by the Radiology Committee of the Medical Research Council. The above sums are in addition to grants in furtherance of cancer research, amounting to £6,480, made during the current financial year; nor do they include the sum of £5,000 for radium, for use in the cancer research departments of St. Bartholomew's Hospital and St. Peter's Hospital, by the cancer research committee of the London Association of the Medical Women's Federation, and in the radium emanation depot to be set up at the Middlesex Hospital. The foundation of a periodical to contain abstracts on cancer research throughout the world, and the formation of a library of reprints, was the subject of a report from the Scientific Advisory Committee. A sub-committee to work out the details was appointed as follows: Sir William Leishman, Director-General A.M.S.; Professor C. J. Martin, director of the Lister Institute of Preventive Medicine; Dr. Archibald Leitch, director of the Research Department, Cancer Hospital, London; and Professor W. S. Lazarus-Barlow, of the Cancer Research Laboratory, Middlesex Hospital. It was reported that the questionary on cancer has now been circulated, through the agency of medical missionaries, to some 900 centres in different parts of the world.

THE EQUIPMENT OF THE PRIVATE RADIOLOGIST.

Two years ago Dr. A. E. Barclay, now the president of the Röntgen Society, gave a description before that body of the organization and equipment of the *x*-ray department of a large hospital (BRITISH MEDICAL JOURNAL, January 13th, 1923, p. 73). As a corollary to this Dr. R. Craig Rodgers of Burnley, in a paper read to the same society on April 7th, described the organization and equipment of *x*-ray rooms arranged for the private radiologist. He had in mind the radiologist who found it necessary to undertake all forms of diagnosis and treatment, and to utilize diathermy, ionization, and ultra-violet radiation. He excluded intensive or deep therapy, believing that this form of treatment would be undertaken in the future only in nursing homes or hospitals where the radiologist could secure the collaboration of physician, surgeon, and pathologist, and an adequate nursing service. The primary requirement for the *x*-ray department was a house in a central area, but remote from noisy traffic. He found such a house in Burnley, and fitted it up entirely for *x*-ray and associated work. The *x*-ray room (two rooms made into one) was on the ground floor; the entrance to it was so arranged that a stretcher case could be carried in from the ambulance and placed on the couch without turning a corner. Such a room, Dr. Rodgers considered, should be bright and airy, and about twice as long as it was broad; this allowed the essential pieces of apparatus to be placed conveniently, and avoided the interlacing and possible entanglement of overhead gear. The accessory rooms grouped around the *x*-ray room were the waiting room, two dressing rooms, lavatory, power room, loading room (where cassettes could be loaded and films obtained at a moment's notice), and the photographic room. For the *x*-ray room panelled walls, although expensive initially, presented many advantages and were preferable in appearance to wallpaper and paint. The illumination of the room was worthy of attention. By using concealed strip lamps in the cornice at the top of the panelling the light was reflected from the ceiling, resulting in an even, diffused, glowing effect, not only restful to the eyes of the operator, but also useful in making them ready for screening. He found it advantageous to place a resistance in the circuit so that the white light could be dimmed out and a violet light started up, which in its turn was dimmed out, thereby avoiding the sudden plunge into total darkness which was distressing for nervous patients. The decoration of the waiting and other rooms was important also. The colour scheme in his own waiting room was a cheerful blue and orange, and as soon as patients entered the house they got an effect of sunniness and cheerfulness even on a dreary day. For the developing room he used a cellar, approached by a winding staircase which served as a light trap. The rooms for diathermy, ionization, and ultra-violet radiation, with a room used as a personal study, were on the upper floor. The power unit, which consisted of a high-tension transformer and a coil outfit, was assembled in a room leading out of the *x*-ray room, and had a floor of thick concrete, thereby greatly diminishing any vibration from the machinery. This disposal of the power unit in a separate room had many advantages, among them the absence of the usual cabinets, which took up floor space, the greater ease in getting round the apparatus for testing and cleaning, the diminution of noise and vibration, the concealment of any visible sparking, and the elimination of noxious fumes. The principal items of apparatus in the *x*-ray room were an upright screen stand, a screening couch, a table for the Potter-Bucky diaphragm, a movable tube stand, and switch controls for the transformer and coil outfits. It was desirable to have a ready means of cutting off the electrical supply from the whole establishment, both in order to check expenditure and to comply with the requirements of the insurance companies; therefore he had a main switch placed behind the front door, and made it a rule for the last person leaving the rooms to switch off the current. Dr. Rodgers showed various photographs and plans of this house, and specially emphasized the arrangements for securing adequate ventilation. The poor health of many *x*-ray workers might be caused, he thought, not only by *x* rays leaking from insufficiently protected apparatus, but from unhealthy atmospheric conditions created during the production of the radiations, owing to ionization of the atmosphere, noxious chemical fumes, the by-products produced by electrical discharges, escape of coal gas from interrupters, and also, of course, the products of respiration. The danger arising from alterations in atmospheric conditions in small, badly ventilated *x*-ray rooms was worthy of greater consideration than it had so far received.

THE ADVANTAGES OF DRAFTS.

SIR WILLIAM OSLER said that no author ought to send anything to be printed until he had had five drafts and corrected each. This was the number Renan required. Sir Clifford Allbutt put the minimum at three, not counting the first rough note. Anatole France, about whose habits a stream of little books has been appearing since his death, said seven, with an eighth to make sure that the correc-

tions on the seventh had been understood. In the first he enlivened what had been platitudinous. The second was for "weeding out the dandelions," whos, whichs, and whoms. In the third he eliminated the semicolons, shortened his sentences, and struck out phrases which merely linked one sentence with another, or marked a transition from one thought to another, a task that should be left to the reader. In the fourth draft he gave special attention to the order of sentences and to the repetition of the same word; he looked on the recurrence as a warning to rewrite the sentence, not to search for a synonym. The fifth draft saw the disappearance of adjectives, for he was of the opinion of Voltaire, that though the adjective might agree with the substantive in gender, number, and case, very often it did not suit it. From the sixth draft he chipped away what he called the pastry, all that was adventitious and redundant, and over the seventh draft he passed the plane, for, he said, a good writer is like a good cabinet maker—he planes his phrases smooth. France would have agreed with Byron's epigram had he known it—"Easy writing's d——d hard reading."

CONVENTION OF ENGLISH-SPEAKING OPHTHALMOLOGICAL SOCIETIES.

THE Ophthalmological Society of the United Kingdom, together with its affiliated societies, will, as we announced some months ago, hold in London from July 14th to 17th next a Convention of English-speaking Ophthalmological Societies and Associations. Letters have been sent to the presidents of such bodies in the different parts of the British Empire and the United States of America inviting them to appoint official delegates. On the evening before the Convention opens a reception will be held at the Royal College of Surgeons of England. Four mornings, two afternoons, and one evening will be devoted to scientific work. On the evening of July 15th there will be a symposium on the evolution of binocular vision, in which Sir Charles Sherrington, O.M., G.B.E., P.R.S., Sir Arthur Keith, F.R.S., Sir Frederick Mott, F.R.S., Professor G. Elliot Smith, F.R.S., and Professor S. E. Whitnall will take part. The Bowman Lecture will be delivered by Sir John Parsons, F.R.S., on the afternoon of July 16th. One of the subjects for discussion is the microscopy of the living eye. It will be opened by Dr. Gordon Byers (Montreal), Dr. Arthur J. Bedell (Albany, U.S.A.), Mr. Harrison Butler, and Mr. Basil Graves. One afternoon will be set apart for a visit to institutions of ophthalmic interest, and there will be a museum of drawings, instruments, and pathological and anatomical specimens. At a general meeting of the Convention the re-establishment of international ophthalmological congresses on the pre-war basis will be considered. Social functions will include a reception at the Royal Institution by its president and council, a garden party given by Sir William and Lady Lister, and a reception at the Wellcome Historical Medical Museum by the President of the Convention, Mr. E. Treacher Collins. The official banquet of the Convention will be held on the evening of July 17th. On the following day there will be excursions to Oxford and Cambridge, and local committees in various parts of Great Britain will assist those desirous of making more extended excursions. The general secretary is Mr. C. B. Goulden, 79, Portland Place, W.1.

THE Société de Neurologie de Paris intends to celebrate its own twenty-fifth anniversary and the centenary of Charcot by a meeting in Paris on May 25th, 26th, 27th, and 28th. The centenary will be specially celebrated on Tuesday, May 26th, when a series of addresses will be given by representatives of various societies. On Wednesday, May 27th, the Société will hold a discussion on migraine.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Divorce and Venereal Disease.—When the report stage of the Summary Jurisdiction Bill was taken in the House of Commons, on April 8th, Mr. Harney moved to add to the grounds for judicial separation "that her husband is suffering from venereal disease and insists on cohabiting." The cruelty to future generations had, he said, to be remembered, and not only the question of infecting the wife, though that had been held to constitute cruelty. Mr. G. Locker-Lampson replied that the Home Office was advised that the Act of 1895 covered the case, and that no further reference in the present bill was necessary. If in the opinion of eminent lawyers in the House of Lords this was not so, the Government would see that a provision was put into the bill. The amendment was withdrawn.

Royal Army Medical Corps.—Sir Philip Richardson asked, on April 7th, whether the falling off in the number of entrants for the Royal Army Medical Corps was not due to the fact that the pay and pensions of medical officers, particularly those in India, were smaller in purchasing power than in 1914. The Secretary for War replied that the falling off was due to a number of causes, and he hoped it would be possible to find a remedy without undue delay.

Vaccination.—Mr. Whiteley asked the Minister of Health, on April 7th, what was the criterion of successful vaccination adopted in the classification of small-pox cases by the medical officers of the Ministry. Sir Kingsley Wood replied that the statements of the medical officers of the hospitals to which the cases were admitted were classified as to the presence or absence of vaccination cicatrices. A table supplied by the Minister of Health to Mr. Groves on April 9th shows that in 1872 vaccinations in England and Wales were 85 per cent. of births and the small-pox deaths numbered 19,022, or 8.2 of the population. In 1922 vaccinations were 40.3 per cent. and small-pox deaths were 27. The percentage of vaccination was in 1923 and 1924 not available; the deaths were 7 and 13. In London, in 1872, the vaccinations were 81.9 per cent. of births and the small-pox deaths 1,786, or 5.4 per 10,000. In 1922 vaccinations in London were 45.7 of births and the small-pox deaths numbered 20. In 1923 London reported one death and in 1924 none.

Conveyance of Tuberculous Patients.—Sir Kingsley Wood stated, in answer to Dr. Watts on April 7th, that the Minister of Health had been in communication with the Manchester Corporation about the conveyance of tuberculous patients to and from the Baguley Sanatorium in corporation motor omnibuses. Arrangements had now been made for disinfecting such omnibuses after such use.

Pensions.—The Minister of Pensions informed Sir Wilfrid Sugden, on April 9th, that the Regional Director of the North-Western Pensions Region, the Commissioner of Medical Services, the Regional Awarding Officer, and the Medical Assessors all denied absolutely the charge that assessors in the North-Western Region were required to reduce a certain number of pensions weekly. Such a practice, Major Tryon added, would be entirely contrary to all instructions. In reply to Sir A. Holbrook, on April 9th, the Minister of Pensions said that the increase in salary of £50 per annum to be given to full-time medical officers of the Ministry was neither a bonus nor a gratuity, but part of a general revision of the remuneration of the administrative medical staff of the Ministry. The work of the Ministry had diminished, but the staff had been reduced correspondingly, and the work and responsibilities of individual officers remained as great as before.

Answers in Brief.

At the Chemical Warfare Research Department since 1918 317 officers and 207 other ranks have been subjected to poison gas tests.

The provisional figures for the manufacture of dangerous drugs in Great Britain during 1924 are: morphine 99,400 oz., heroin 16,700 oz., codeine 153,300 oz.

Approximately 100 local authorities in England and Wales possess public abattoirs.

Provision for maternity and child welfare has now been made in every sanitary district of England and Wales. Milk is provided for mothers and young children by 426 local authorities.

The Minister of Labour does not think that the time is opportune to approach the French and German Governments with a view to ratifying the Washington Hours of Labour Convention.

The Home Secretary does not see his way to introduce legislation to allow the children of women prisoners to be born outside of prison; 19 children were born in prison during 1924.

An annual grant of money, varying from year to year, is made to the National Council for Combating Venereal Diseases, and a return is made to the Ministry of Health showing in detail how it is expended. For the last financial year the grant was £9,183.

Expenditure by the State on health, including health insurance, and housing rose from 2s. 3½d. a head of the population of the United Kingdom in 1913-14 to 9s. 1½d. a head in Great Britain in 1923-24.

Of 49,245 recruits rejected by the army as physically unfit in 1924, 12,813 came from London, 3,641 from Glasgow, 2,147 from Gloucestershire, 1,757 from the West Riding, 1,698 from Sheffield, 1,321 from Manchester, 1,283 from Liverpool, 1,090 from South Wales, 1,408 from Birmingham, and 1,075 from Staffordshire.

The completed results of the second quinquennial valuation under the National Health Insurance Act will not be known until after the end of this year.

ON THE AVERAGE LONGEVITY OF PHYSICIANS.

BY

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IMPERFECT as are our means of assessing the hygienic conditions of England and Wales before the establishment of the General Register Office, the work of various vital statisticians, of Rickman and Farr in the past and of Brownlee and others in our own time, has made it almost certain that the general expectation of life in the eighteenth and earlier centuries was less than now; we are well assured that it is still improving.

It is a matter of some interest to try to determine whether what is true for the whole population is true for some particular class of it. Dr. Brownlee, in some unpublished researches to which he has kindly allowed me access, has studied the vital statistics of the peerage, and it seemed to me that a similar investigation of one part of the medical profession—namely, physicians—might profitably be made. To this end I have utilized the rich statistical material contained in the *Roll of the Royal College of Physicians of London* compiled by Munk, whose record extends back to the foundation of the College in 1518. Down to the beginning of the seventeenth century the numbers are scanty and the particulars insufficient for statistical study. Thereafter the material is more satisfactory, and I have carried out the necessary statistical analysis in order to determine the average length of life of a physician at different dates.

The procedure has been to calculate for each individual the record of whom is sufficiently detailed (1) his age at admission as licentiate, candidate, or Fellow, and (2) his age at death. From these data the numbers exposed to risk and the numbers dying at any age have been computed, and the "mean expectation of life at age x" obtained. The results are shown in Table I. Before turning to this, attention must be paid to two points of importance. (1) The bulk of the records of birth, death, and entry are given in two forms, examples of which are as follows: (*a*) born 1760, entered 1787, died 1833; (*b*) entered 1787, died 1833, aged 73. In the building up of a life table these two entries should be treated differently, for in the first case the *mean* age of entry is 27 years and the *mean* age at death is 73 years; in the second case the corresponding mean ages are 27½ and 73½ years.* Unfortunately in taking out the records this point was overlooked and the two classes were treated alike. It was calculated, however, that if *all* the records were first treated as belonging to class (*a*) and then *all* treated as belonging to class (*b*)—that is, the extreme case—the difference made in the expectation of life at any age is never greater than half a year. The error introduced is thus not of any great importance. Actually treating all the data as class (*a*) gives the lower "expectation," and to avoid any exaggeration of length of life this was adopted. (It makes some proportion become exposed to risk half a year too early and die half a year too early.) (2) A more important question is the possibility of a bias being present tending to lengthen the expectation of life. This consists of the fact that those members whose records are most detailed may tend to be the more renowned, and hence to some extent the longer lived. There were no very definite signs of such bias to be seen in taking out the actual records, but the possibility must not be overlooked.

In Table I, it will be seen, the members have been divided into four groups according to their date of birth. The periods are, roughly, (1) the seventeenth century, (2) the first half of the eighteenth century, (3) the second half of the eighteenth century, and (4) the first quarter of the nineteenth century. No births occurring after 1825 can be used, for this would not ensure the death of all exposed to risk.

* For in the first case the physician might have died at any age between 72 years (that is, if he were born at the very end of 1760, and died at the very beginning of 1833) and 74 years (that is, if he were born at the very beginning of 1760, and died at the very end of 1833). This gives a *mean* age at death of 73 years. In the second case the physician died between 73 and 74 years of age—a mean age at death of 73½ years. The same reasoning applies to age at entry.

TABLE I.

The expectation of life at different ages of physicians grouped according to their date of birth.

Age.	194 Births 1570–1689. Expectation of life* at each age in years.	176 Births 1690–1749. Expectation of life at each age in years.	307 Births 1750–1799. Expectation of life at each age in years.	126 Births 1800–1825. Expectation of life at each age in years.
35	30·3	32.1	35.3	—
40	27.0	23.9	31.3	—
45	23.2	25.4	27.2	31.9
50	19.1	22.3	23.1	26.9
55	15.5	18.6	19.4	22.0
60	13.5	15.1	16.1	17.5
65	11.3	12.1	13.2	13.7
70	9.1	8.4	11.2	10.5
75	6.7	5.8	8.6	8.4
80	4.9	4.5	6.3	5.9
85	3.6	3.7	3.9	4.2

* Complete expectation ($\mathring{e}_x$).

For the last group (1800-1825) it was possible only to take out the records of Fellows (the earlier groups comprise extra-licentiates, licentiates, and candidates as well). The Roll compiled by Munk gives no records of members born later than 1800, so that to obtain the details for this last group recourse had to be made to the annual lists of the College and to the obituary notices in contemporary numbers of the *British Medical Journal* and the *Lancet*. After the Medical Act of 1858 the numbers of members of lower rank became so great that the births and deaths are rarely recorded, while the task of going through the annual lists would have been very heavy. It was, however, possible to obtain details of sufficiently large numbers of Fellows to carry on the table till 1825, but the expectation of life cannot be calculated for this period before 45 years of age, for the age of entry as a Fellow is naturally more advanced and the numbers exposed to risk before age 45 are very small.

As would be anticipated, the expectation of life has steadily increased between the earliest period (1570-1689) and the last (1800-1825). At ages 45 and 50 the increase is as much as eight to nine years; in other words, whereas the "average" physician of 45 years of age in the seventeenth century might expect to live to be 68 (according to these data), his prototype at the beginning of the nineteenth century might expect to live to be 77. If he were 60 years of age in the nineteenth century he might expect four more years of life than his ancestor in the seventeenth century. The increases shown between one period and that immediately following it are somewhat erratic, more especially in the last four age groups, where several times an actual decrease occurs. This is probably due in part to the smallness of the sample, so that the numbers exposed to risk at these later ages became too reduced to give consistent results.

A comparison of interest can be made between the average duration of life of these physicians, at different dates, and the average duration of life of English peers at the same periods. The data relating to the latter have been worked out by Dr. Brownlee, to whom I am again indebted for permission to use these hitherto unpublished figures. The comparison is set out in Table II.

At each period, it will be seen, the physicians of 35, 40, and 45 years of age had an expectation of one to two years' more life than the peers of corresponding age. At the later ages, in the 1570-1689 period, there is little difference between the two classes until the age of 75 is reached. At and beyond that age the peers hold a distinct superiority. In the period 1690-1749 the physicians continue to have the greater expectation up till 65 years of age. At 70 and beyond the peers have again the superiority. In the last period (the dates are not quite identical for the two classes) the physicians continue to

TABLE II.

Comparison of the expectation of life of physicians and peers at different dates.*

Age.	1570-1689.		1690-1749.		1750-1799.	1750-1809.
	Physicians.	Peers.	Physicians.	Peers.	Physicians.	Peers.
35	30.3	28.6	32.1	31.0	35.3	33.7
40	27.0	25.1	28.9	27.6	31.3	29.8
45	23.2	21.9	25.4	23.6	27.2	26.0
50	19.1	18.8	22.3	20.3	23.1	22.4
55	15.5	15.7	18.6	17.2	19.1	18.7
60	13.5	13.4	15.1	14.2	16.1	15.3
65	11.3	11.2	12.1	11.8	13.2	12.2
70	9.1	9.2	8.4	9.5	11.2	9.4
75	6.7	7.6	5.8	7.5	8.6	7.3
80	4.9	6.6	4.5	5.8	6.3	5.6
85	3.6	5.7	3.7	4.5	3.9	4.2

* These figures relate only to *married* peers. The expectation of life for married classes is, however, usually greater than that for the unmarried, so that all peers would possibly be at a still greater disadvantage in comparison with the physicians.

have the larger expectation until the final age of 85 years, when their expectation is 0.3 of a year less than that of the peers.

These variations may again be partly due to the small numbers of physicians exposed to risk at the later ages (the largest group is that of 1750-1799); on the whole, it does appear that the physicians are the better lives, and more especially so at the earlier ages. Perhaps they more easily follow a simple life and more easily pursue "the even tenor of their way" (in spite of a life of harder work); or possibly they constitute a "select" class even in comparison with the peers—to enter at all upon the profession of medicine demands a certain level of health. It is possible, too, that by the age of 35 years, at which age the expectation of life is first calculated, the physician has acquired some immunity to diseases such as tuberculosis. On the other hand, constant contact with all forms of disease would, it might be thought, expose the physician to greater risks than those run by a normal population.

An indication as to whether a more modern population of doctors is a select class in comparison with the whole male population can be gained by use of the occupational death rates, for 1910-12, for physicians, surgeons, and other registered practitioners. From these rates the expectation of life can be calculated for this class by the method devised by Dr. E. C. Snow (Cmd. 1010). A slight adjustment is necessary to obtain the years of life lived over 75. The death rate is given for age group 75 years and over. It is required for 85 years and over. The procedure has been to divide it in the same proportion as the death rates for all English males of 75-85 years and 85 years and over bear to one another. This, if anything, will probably understate the expectation of life for the doctors, but the error can be only very slight, and an alternative method of obtaining their expectation gave very closely similar results.

In Table III comparison is made between the expectation of life for practitioners, thus calculated, and the expectation of life for all English males (1) based upon mortality in 1838-54, and (2) mortality in 1910-12.

It will be seen that the medical class has a longer expectation of life—a year at 35 years of age—than all English males (1910-12 mortality), and thus they are to some extent a select population or exposed to less risks of mortality. The physicians on the Roll of the College at the earlier dates would be a still more select population, for they might be said to represent Harley Street, while the 1910-12 mortality represents rather the general practitioners. Dr. William Guy, from an examination of length of life of members of the medical profession dying between 1848 and 1853, came to the conclusion that "the duration of life is greater among physicians and surgeons than among the general practitioners of medicine and surgery"—but his data were scanty (On the Duration of Life among Medical Men, *Journal of the Statistical Society*, vol. xvii, 1854). By referring to the expectation of life of physicians whose births fall between 1690 and 1749 (Table II) it can be seen that they are superior in length of life to their brethren dying in 1910-12 (Table III).

TABLE III.

Expectation of life of all English males based upon mortality (1) in 1838-54 and (2) 1910-12, and of physicians, surgeons, and registered practitioners based upon mortality of 1910-12.

Age.	Mortality 1838-1854. Expectation of life (years).	Mortality 1910-12. Expectation of life (years).	Physicians, Surgeons, and Registered Practitioners. Mortality 1910-12. Expectation of life (years).
35	29.4	31.7	32.7
40	26.1	27.7	
45	22.8	23.9	24.7
50	19.5	20.3	
55	16.5	16.9	17.6
60	13.5	13.8	
65	10.8	11.0	11.4
70	8.5	8.5	
75	6.5	6.5	6.5
80	4.9	4.9	
85	3.7	3.7	3.3

Realizing thus how select is the class in question it is not so surprising to observe that the physicians born in the seventeenth century have a longer expectation at nearly every age after 35 years than all English males dying in the second quarter of the nineteenth century. The peers do not hold a similar advantage (except at the later ages) till the period 1690-1749. On the other hand, the physicians born in this period are superior in length of life to all English males dying in the early years of the present century. Or, if mortality in 1910-12 be roughly translated into births between 1810 and 1875, the expectation of life at ages 35 and over of males born between these dates is inferior to the expectation of this select class of physicians born over one hundred years earlier.

In conclusion, I wish to express my indebtedness to Dr. M. Greenwood, at whose suggestion and with whose kindly advice this paper was undertaken; and likewise to the Royal College of Physicians for the facilities readily placed at my disposal.

POST-GRADUATE STUDY IN LONDON.

RESUMED DISCUSSION.

THE discussion on post-graduate education in London, held under the auspices of the Fellowship of Medicine and Post-Graduate Association, which was adjourned on March 18th,[1] was resumed at the house of the Royal Society of Medicine on April 8th. There was again a good attendance.

Sir W. ARBUTHNOT LANE, who presided, said that many helpful suggestions had been made in the first part of the discussion, and these it was hoped to incorporate in the work of the Fellowship. That the Fellowship had met a need was proved by the increasing number of practitioners who took advantage of its facilities.

Sir THOMAS HORDER, in opening the discussion, said that there was general agreement on two points: the need in London of post-graduate education, and the desirability of extending the present efforts of the Fellowship. He shared the view already expressed that the post-graduate habit in this country needed stimulating. The sooner it was cultivated in Great Britain the better. It would be lamentable if the habit had to be forced upon the profession from outside, yet it was within the bounds of possibility that the public or a wiser Government than had yet appeared might

[1] BRITISH MEDICAL JOURNAL, March 28th (p. 613).

make it a necessity. Of the suggestions he himself had to make, two were not new to the Council of the Fellowship, before whom he had advanced them several times, and both had been received sympathetically. The first was that the panel—if such a term could be used for the 270 medical men whose names were set out as ready to give post-graduate instruction—should be made smaller and yet smaller. It led to confusion to issue a replica of the names of the staff of various hospitals, whether or not the members had expressed willingness to assist. The panel of post-graduate tutors must be keen men—men whose names had not been merely added to the list in order to get an impressive array. His second suggestion was that an attempt should be made to recapture certain teachers in the undergraduate schools. It was a severe blow to post-graduate teaching when the deans and committees of the majority of undergraduate schools withdrew their active interest. Such action might have been in the interest of the schools concerned, but so far as post-graduate education was concerned the result had been very unfortunate. He held that the dean of a medical school should not have so strict a lien over the teaching power of members of his staff. If a man, having given adequate service to the teaching of undergraduates, wished to teach post-graduates, he should be allowed to do so without running the risk of becoming unpopular, though probably it might be desirable, in order not to mix the two classes of students, that he should undertake his post-graduate teaching elsewhere than at his own hospital. Sir Thomas Horder added that recently he wrote to seventeen teachers attached to medical schools, asking them whether they desired to help in post-graduate education, and in every case but one—and in that one instance the letter miscarried—the reply was favourable. He came now to two suggestions which he had not brought before the executive body of the Fellowship. In the first place, it was imperative for the Association to have a local habitation as well as a name. By a local habitation he meant not merely such hospitality as it enjoyed at the house of the Royal Society of Medicine, but a centre where tuition could go on by demonstration and lecture, something like the Polyclinic of years gone by. This should be known as the home of post-graduate teaching in London. Secondly, a hostel was almost an essential part of a post-graduate scheme, not necessarily that men from overseas or from the provinces should be accommodated at the hostel, but they should be referred from there to places of comfortable lodging during their stay for post-graduate study. He could not help feeling that no scheme for post-graduate education in London would ultimately be satisfactory unless it included a college for teaching and a hospital for practice. This might seem visionary. If it did, let those interested at least go ahead with the formation of a panel of teachers, admission to which would be rather jealously guarded, the setting up, or rather the extension, of the present bureau of information, and the establishment of some temporary fabric until such time as a wealthy philanthropist or a wise Government provided a permanent and worthy home.

Dr. W. GRIFFITH referred to the account of post-graduate facilities for members of the navy and army medical services, which had been given at the first meeting by representatives of the navy and army, and the lack of anything comparable in the civilian medical services. It would be a very good plan if the authorities responsible for national health insurance would provide opportunities for insurance practitioners to undertake post-graduate study. The gain would be entirely the gain of the insurance medical service and of the public, and the cost should be borne by the service itself, and not by the individual practitioner. Medical men on the panel should at intervals be granted study leave, without pecuniary sacrifice on their part, and in large centres such as London one of the general hospitals should be acquired as the place where such instruction could be given. He believed that such a proposal, if it were brought forward by the Fellowship of Medicine, would meet with a sympathetic response from Mr. Neville Chamberlain, and he suggested that an influential deputation should wait upon the Minister with this object in view.

Dr. F. HERNAMAN-JOHNSON described what had been done along these lines by radiologists. Five years ago a society was started, but little progress was made until a house was secured (in Welbeck Street), and the Institute of Radiology, as it was called, came into being. The Mackenzie Davidson Memorial Fund of some £1,500 was the basis of the venture, but radiologists themselves had raised £1,600 or £1,700, and had guaranteed certain annual funds for some time to come. All this experience seemed to bear out Sir Thomas Horder's plea that a definite home must be obtained before any considerable progress could be made. The Institute of Radiology hoped to take a large share in post-graduate work, and possibly to it might be delegated the work of the Fellowship so far as radiological matters were concerned.

Sir J. DUNDAS-GRANT recalled the programme of the old Polyclinic, where the demonstrations, and to some extent the lectures, were arranged on a methodical plan so as to cover various subjects within a certain time. No honorarium was paid, but distinguished lecturers and demonstrators came forward most readily. He thought that the Polyclinic scheme in outline was worthy of adoption.

Dr. F. J. MCCANN said that the Fellowship of Medicine had nestled under the fostering care of that mother of societies, the Royal Society of Medicine, for too long a time; it should now lead an independent existence. In order that it might do so three things were required. The first was money, always a difficulty in post-graduate schemes. He suggested that an appeal be launched from the Mansion House in order to enlist the philanthropic interest of the citizens of London, and that a sum such as £500,000 should be boldly aimed at. He pointed to the success of the British Empire Cancer Campaign in this connexion. The second essential was a home, which should be termed the Imperial Medical Graduates' College, and situated, if possible, somewhere in Bloomsbury, because the majority of the men who came for post-graduate instruction to London lived in that district. This college should be linked up with one or more general hospitals and certain special hospitals. The lecturers and demonstrators at the college should serve on a basis of payment; only in that way could proper and continued service be assured. The third essential was a man with organizing ability to act as principal, who would be able to mould conflicting interests and appease petty jealousies.

Mr. H. W. CARSON said that when Sir Thomas Horder expressed the hope that the teachers of undergraduate schools might be "recaptured" he was using rather an optimistic word, for the speaker did not believe that these gentlemen had ever been captured. It was very desirable to induce some of the teachers in the undergraduate schools to help. He was not altogether in favour of the idea of a central hospital. It was doubtful whether any existing hospitals would allow themselves to be devoted to post-graduate teaching, and the alternative was to build and maintain a hospital, which would be a colossal expense, and could hardly be achieved for many years to come. With such a hospital, too, either the staff would have to be permanent, in which case the post-graduates would have only a limited number of teachers, or temporary, which would be unfortunate for the hospital itself. If such a hospital were established, the co-operation of the non-undergraduate hospitals of London would still be required. At the North-East London Post-Graduate College practitioners in the neighbourhood were encouraged to become members, and for a small annual subscription they were enabled to share in the facilities of the college and to attend the various demonstrations in the hospital. That was an idea which might be extended. Another suggestion was that the Fellowship of Medicine should invite provincial centres to receive members of their teaching staff and allow them to run a clinic for a time or give demonstrations or lectures in connexion with the local hospital.

Dr. SOPHIA JEVONS said that from the point of view of the student in need of immediate instruction some of the schemes that had been brought forward were extremely idealistic. She did not think that the big sums which had been mentioned were ever likely to be obtained from the public. In the Cancer Campaign there was an obvious appeal, because everybody was afraid of getting cancer, but to urge on the public the desirability of financing an imposing post-graduate scheme for the medical profession, which might lead twenty years hence to the prevention of certain common diseases, was hardly likely to be successful.

The meeting should concentrate on something immediate and practical.

Dr. BERNARD MYERS said that he had asked at least a hundred people from abroad or from the provinces what it was exactly that they wanted in the way of post-graduate facilities. What they wanted was practical work; they wanted to see cases, chiefly common cases, not too many rare cases, though a few of those, and cases which they could themselves examine in detail. They desired also to acquaint themselves with the most recent work that was going forward, and from this point of view they liked their instructors to be authorities on the subject. Post-graduates from abroad—even Americans—stated that they could see better cases in London than in any other part of the world. It would be a distinct advantage to have a centre, preferably in Bloomsbury, but the case of the local practitioner, who did not want to be too far away from the calls of his practice, had also to be considered, and arrangements might be made for him to attend a local hospital, even a cottage hospital. About eighteen months ago he made a suggestion to the British Medical Association that men should be sent down to cottage hospitals to give lectures and practical demonstrations, and virtually to take over the work of the hospital for an afternoon, but the British Medical Association thought the time was not quite ripe.

Sir HENRY SIMSON pointed out that there were four post-graduate hospitals which catered for the needs of the doctors in their neighbourhood—the North-East London, the Great Northern, the West London, and the Hampstead General. The reason for the failure of the Polyclinic was because general practitioners did not want lectures; they wanted to see cases and to do practical work. A lecture once a day to general practitioners would not accomplish very much, because they could get all that they wanted along that line from the medical journals. Some post-graduates coming to London desired to see the work of a certain eminent man, others wanted demonstrations in special subjects. All this could be arranged from a central bureau. Others wanted a three or four weeks' general "rub up." For these the hospitals he had named were available. Others, again, were London practitioners who wanted some facilities for study on just one day a week. The post-graduate hospitals covering four districts of London should go some way to meet this need also.

Professor LOUISE MCILROY deplored the absence of obstetrics from the programme of the Fellowship. She knew that a good many graduates coming from abroad were satisfied with the rest of the teaching, but criticized this omission; to make it good would probably necessitate some combination of hospitals and teaching staffs. Ante-natal clinics were being started throughout the country, and young graduates were expected to have a good deal of experience in this direction.

Mr. E. B. TURNER thought that the possibility of a house, including a hostel, as a post-graduate centre in London, in a very favourable situation, was well within the bounds of practical politics. The expenditure would be comparatively small, and the hostel might even be made a remunerative speculation which would assist the general funds. Those who came for post-graduate work wanted, not the set academic lecture, but the cases which they could see and examine for themselves more intimately than cases shown in illustration of a clinical lecture. They wanted initiation into the technique of case management. It would, of course, be a great thing to establish a central post-graduate hospital; in the meantime, why not make use of the wonderful clinical material available in Poor Law hospitals? With regard to the granting of study leave to insurance practitioners, as Dr. Griffith had suggested, the insurance practitioner was in the great majority of cases a private practitioner as well, and although the Ministry of Health might make arrangements for the carrying on of his insurance practice during his study leave, he would still find it difficult to get away from the calls of his private practice.

Mr. J. P. LOCKHART-MUMMERY said that two things were necessary—a keen desire for post-graduate work and a central institution. The main difficulty was the question of money. It was no use to ask the public to give money for post-graduate teaching. Post-graduate work had got to "carry its own load." Could money be got out of post-graduates? His own belief was that it could not. There were over 40,000 practitioners in this country; if 5,000 of them would pay £1 a year a central institution could be run on most satisfactory lines, but he was not sanguine that the 5,000 would be forthcoming.

Dr. R. A. GIBBONS also was quite sure that money would not be forthcoming from the public. An appeal might be made to the profession for a moderate subscription which would justify an attempt being made to start a central institution.

Dr. C. M. WILSON said that he did not think the man in general practice would come forward for a fortnight's or three weeks' course. He would come on a particular day or to special lectures whenever the material was provided which he desired. With regard to overseas practitioners, anyone who had been to Berlin would realize certain respects in which post-graduate facilities in London fell short. In Berlin there was one centre—the university—where everything could be found. In London a man had to go first to one part and then to another. It was quite impossible to give practical lectures and demonstrations to such a large number as a hundred. Practitioners would come even to these set lectures when they were well given, but a polyclinic would not solve the practical problem of the man who wanted to examine his case beforehand and then hear it talked upon.

Sir ARBUTHNOT LANE, in closing the meeting, said that he thought the Fellowship could congratulate itself on the result of the discussion. A comparison with Berlin had been made, but there was one advantage in London as against Berlin, or Vienna, or Paris—namely, that the people who came for post-graduate instruction spoke a common language. All the suggestions made during the discussion would be brought before the next meeting of the Council.

In the course of the proceedings a letter addressed to the officers of the Fellowship from an experienced post-graduate overseas was read by one of the honorary secretaries, Dr. A. J. Whiting. After urging some criticisms of what he had found in London, such as that medical schools were widely separated, that some lecturers failed to put in an appearance when announced, and that the gift of imparting knowledge was not always evident in the teachers, he went on to say that he would be willing to pay a fee of 50 guineas for a month's concentrated tuition, or 100 guineas for a ten weeks' course, a week to consist of five and a half days of six or more hours' instruction a day. For such fees he would expect—

(1) to see selected out-patients and hear the cases discussed by a master in his own subject; this master should be able to outline his own teaching and then give the various forms of diagnoses and treatment by first-rank men in Europe and the United States;
(2) to visit wards daily and to follow up medical cases and see surgical treatment;
(3) to find that all possible examinations (pathological and bacteriological) in regard to a case were done and could be seen;
(4) to see a first-class *x*-ray department and operator;
(5) to see demonstrations on the cadaver and models;
(6) to have constant revision of anatomy and opportunity for private or team study by post-graduates themselves;
(7) to see operations done in all branches of any specialty.

This correspondent added that he would not expect lectures of any systematic sort, or a collection of cases and an address thereon, nor did he want long-winded dissertations on this or that theory, or an autobiography of the teacher!

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

MENTAL HOSPITALS ASSOCIATION.

THE evidence given by the Mental Hospitals Association before the Royal Commission on Lunacy and Mental Disorder was reported in the BRITISH MEDICAL JOURNAL of March 28th (p. 611). We have since received from that association a summary of the evidence submitted beforehand to the members of the Commission, which embodies points not brought out in the verbal examination of the witnesses. It may be explained that such a summary as this, which is customarily submitted by bodies giving evidence, is for the private information of the members of the Commission, and does not form part of the Commission's proceedings (unless the Commission so orders, as it did in the case of the British Medical Association's Memorandum),

and is not distributed to the press. It is merely a document from which members of the Commission put questions to the witnesses, and the answers to the questions are technically the evidence. We note that the summary is entirely in the name of Sir William Hodgson, who is a member of the medical profession, though Alderman Taggart was associated with him in the verbal evidence. Points other than those brought out in the verbal evidence are as follows.

Sir William Hodgson urged that in future all medical superintendents should be required to hold diplomas in mental science. He described some of the recent statements in criticism of asylum administration as not only unjust, but based upon inadequate experience of the character and work of these institutions. He wished the Lunacy Act of 1890 to be amended so as to prevent any patient from being discharged without the consent of the majority of the committee present at the hearing of the case. Any committee which overrode the opinion of the medical officer who saw the patient from day to day and found himself unable to approve of discharge was incurring a grave responsibility. It was wrong to suppose that insufficient care was taken to protect dangerous patients. Sir William Hodgson went on to refer to the growing improvement in nursing efficiency, and to the full justification of the innovation whereby female nurses were introduced into male wards. Provision made in public mental hospitals for private cases should, where possible, be made in a separate building. The strictly private hospital would always be wanted by a limited class of people. With regard to the general inspection of mental hospitals, medical inspectors should be in the majority on any staff, but legally trained minds were also required to decide many points of difficulty. Inspectors should submit their reports to a small body of educated and experienced men of affairs, only half of whom should be doctors. The importance of having representatives of the public and of local authorities on these bodies was stressed. He pleaded for a more equitable adjustment of the cost of maintenance as between local authorities and the State in the shape of increased Government grants.

With regard to after-care, it was necessary, Sir William Hodgson said, to ensure that any grants under this head should not degenerate into "doles"; they must be used to assist individuals to become self-supporting. But nothing substantial could be done unless the imperial exchequer bore its fair share of the burden. He argued that it would be a considerable economy in management if the medical and nursing staff of a mental institution could properly organize the work of looking after low-grade mental deficients. In connexion with research work, he protested against a clause in the recent Mental Treatment Bill which provided that mental hospitals should carry out research work on a scheme approved by the Board of Control. Many of these hospitals had now well equipped laboratories fitted on modern lines for pathological and bacteriological research, and it was putting back the clock to try to limit the liberty of mind which was necessary for invention and discovery. Any suggestions which the Board of Control might make to the laboratory experts or medical staff would be thankfully received, but to attempt to control this work by a central authority was a step in the wrong direction. Sir William Hodgson's memorandum concluded with some remarks on slanders on mental hospitals, and insisted that the complaints which were made as to ill treatment were in the main quite untrue.

Scotland.

PROPOSED MATERNITY HOSPITAL AT INVERNESS.

THE Highland Maternity and Child Welfare Union has issued an appeal on behalf of a proposed maternity hospital at Inverness, signed by the Duchess of Sutherland (president of the union), Lady Lovat (vice-president), and Mrs. Merry of Belladrum (chairman and honorary treasurer). The appeal states that a maternity hospital ought to be established in Inverness for the northern counties. It is suggested that it should contain two wards of six beds each and private wards in which paying patients would be received. Such an institution would provide also a training centre for nurses; there is at present no such centre further north than Aberdeen. The only beds for maternity cases available in the town of Inverness, excepting those in the poorhouse, are three beds in the Bowmont Child Welfare Centre. The union considers it would be necessary to collect £10,000, but so far only £700 is in hand.

THE CRICHTON ROYAL INSTITUTION, DUMFRIES.

In our last issue (p. 712) particulars were given of the memorial presented by the board of direction of the Crichton Royal Institution to the Secretary for Scotland, urging the importance of making suitable statutory provisions to allow of rate-aided persons being received as voluntary patients in mental hospitals in Scotland. In his annual report for the year 1924 Dr. C. C. Easterbrook has dealt at considerable length with this grievance; 70 per cent. of the private patients admitted during 1924 to the Crichton Royal Institution came of their own accord, whereas all the rate-aided cases were admitted under certificate. There can surely be no two opinions on the value of the voluntary principle in regard to admission to a mental hospital, and we are in entire agreement with Dr. Easterbrook in his praise of it. The admission of mentally affected persons on a voluntary basis allows of their malady being attended to in time where this is possible, and many patients are thus prevented from drifting into a grave state rendering certification necessary and cure improbable. It is surely, then, necessary that the benefits of early voluntary admission should be available to all classes of the community, and that any impediment to their being utilized by that larger part of the community who seek treatment on account of mental illness should be speedily removed. At the same time it must be noted that the statute does not expressly forbid rate-aided persons being admitted as voluntary patients. It is to the existence of the lunacy grant which is paid to the parish councils in the case of certified rate-aided cases only, and to the fact that few parish councils have been able to see their way to forgo the benefit of this grant, that the present position must be traced. The grant for the year ending May 15th, 1923, amounted to £115,703, or about 2s. 9d. a week for each certified patient. The unwisdom of allowing this grant only in the case of certified patients is already manifest, and a few parish councils have had the foresight to put the interests of the patient before those of a false economy; but insult is added to injury when the certified rate-aided patient is still officially referred to as a "pauper lunatic." It is, to say the least, unfortunate that the official terminology is calculated to wound the feelings of the patient and of his family, and so dangerously to postpone his admission to hospital. Dr. Easterbrook refers to the disability of certification and to that of pauperization. The former would be reduced to its proper dimensions if the practice of admitting rate-aided cases as voluntary patients to mental hospitals were made general. The latter disability he would remove by the transfer of the present lunacy obligations of the parish councils to the District Boards of Control, "thereby bringing the administration of mental disease into line with that of infectious diseases, including tuberculosis."

SCOTTISH HOUSING AND SLUM CLEARANCES.

At the annual general meeting of the Convention of the Royal Burghs of Scotland, held in Edinburgh on April 8th, housing was one of the main topics of discussion. The Lord Provost of Edinburgh (Sir W. L. Sleigh) was in the chair. Provost W. B. Inglis of Alyth moved a resolution to the effect that any future legislation ought to provide that any building which, in the opinion of a local authority, had got into such a state of dilapidation or disrepair as to affect injuriously the interests or amenity of a town or neighbourhood, should be held to constitute a nuisance which the town council should be entitled to require the owner to remove or remedy. The motion was approved, although it was pointed out that there would be some difficulty in wording a clause in a bill. Bailie Riddell moved that the liability on the rates of local authorities with regard to all schemes of housing and slum clearance should be limited to a fixed amount in the £ on the public health rate, and that local responsibility should be limited to a definite figure, which should not be heavy. In the Addison Act that principle had been recognized, and he suggested 2d. in the £ of rental was a fair and reasonable contribution by the locality. Sir Henry Keith said that the question of slum clearance had changed considerably, so far as the burden of local authorities was concerned, within the last two years. When Sir George McCrae was in charge of the Scottish Health Department a proposal had been made to give Scotland £30,000 for slum clearance, to be divided amongst local authorities as far as it would go. This was found to be totally inadequate. More recently

the Government had offered 50 per cent. of the cost of slum clearance, which was the position at present. He had grave doubts whether the Government could be induced to give what Coatbridge wanted, and he suggested that the matter should be remitted to the Annual Committee; this suggestion was accepted. Sir Henry Keith called attention to the work of this committee on housing, and said that the Wheatley scheme was not being used to any great extent. Local authorities could proceed under the 1923 Chamberlain scheme with a subsidy of £6, or under the Wheatley scheme with a subsidy of £9, but with limitations in regard to rents. Some of the English authorities were continuing under the Chamberlain scheme because it gave a greater flexibility than the Wheatley scheme in regard to charging an economic rent. Housing, he said, continued to be a war problem, and for that reason the State, he thought, should bear the burden of the excess expenditure.

PERTH INFIRMARY AND DUNDEE STUDENTS.

The students of University College, Dundee, on April 3rd and 4th carried out an intensive campaign in Perth with the view of clearing off the deficit of £1,289 which had been incurred in the work of Perth County and City Royal Infirmary during the past year. The students arrived in the city on Friday in motor vehicles lent for the occasion, and scattered over the towns and villages surrounding the city, where they spent the greater part of the day in collecting a sum of £250. On the same evening a variety entertainment, held in the Alhambra Theatre, Perth, added another £107. During Saturday the activities of the students, who were clad in many varieties of fancy dress, were directed to collecting in the city of Perth. During the day an amusing interlude took place when the Lord Provost of the City, the Hon. John Dewar, and the general manager of the General Accident Fire and Life Assurance Corporation, Mr. F. Norie-Miller, were "kidnapped" by students disguised as brigands and driven through the streets of the city in a motor lorry to be "sold" by public auction in the local market for a heavy ransom to be devoted to the funds of the hospital. The festivities of the day were ended by a hockey match, procession, and dance, and resulted in a total collection of well over £1,000.

NEW TYPE OF HOUSE.

A new type of dwelling-house, designed and constructed by Mr. J. Livingstone, building contractor, Falkirk, was inspected on April 8th by a large deputation from the Corporation of Edinburgh, which was favourably impressed by the house. It is built of concrete slabs in a reinforced frame with a continuous cavity all round the foundation as a protection against damp. The model house inspected consisted of a bedroom, living room, "kitchenette," and bathroom; it had been erected by three men in a week, and could be sold for £275.

England and Wales.

LEEDS INFIRMARY.

A CONSIDERABLE amount of anxiety is felt with regard to the General Infirmary at Leeds, the present financial position being unsatisfactory, while the pressure of general work continues unabated. At the end of 1924 no fewer than 1,347 patients were awaiting admission, and at one time during the year there were as many as 1,530. The number of casualties treated in the hospital has increased, and out-patient attendances mounted from 260,794 in the previous year to 336,462. The ordinary income decreased from £72,012 in 1923 to £69,069, and, though there was a reduction in expenditure, there remains a deficiency of £27,293 on the year's working; in addition to this there is an overdraft at the bank of £50,000. In spite of the severe trade depression Sir Edwin Airey's Fund for Leeds hospitals has already reached over £80,000, and when the infirmary obtains its share from this fund the financial position will be considerably relieved. The chairman, Mr. T. L. Taylor, at the annual meeting on March 26th, pointed out, however, that it was now necessary to take steps to increase the ordinary income materially. During the last six months serious consideration had been given to the question of requiring some payment from patients, and a special committee had been formed in order to devise some scheme for submission to the hospital board. The Workmen's Hospital Fund had increased considerably during the previous year, owing to extra money received from collieries, and if this advance continued the income would approach the expenditure very closely. The growth of the dental school had been so vigorous that fresh accommodation had become necessary. It had been decided, therefore, to provide a site on which the University would build a new dental school.

NOTTINGHAM CHILDREN'S HOSPITAL.

Notwithstanding the shortage of accommodation, particularly in the dental, massage, and electrotherapeutic departments, the work of the Nottingham Children's Hospital increased considerably during 1924. The gift to the hospital of an apparatus for the production of ultra-violet rays has been of very great benefit to the children, and the treatment of various diseases has been very much improved by it. The erection of the new wing of the hospital is continuing steadily, and at the annual meeting of the hospital on April 7th the chairman, Mr. H. Bell Tawse, F.R.C.S., expressed the hope that it would be in full working order by the summer of 1926, in time for the Annual Meeting of the British Medical Association. The annual report showed that there was a surplus of income over expenditure for the year of £479, subscriptions having slightly increased, though donations and box collections were lower. During the year 600 in-patients had been admitted, and 239 operations performed. In the out-patient department 2,082 children had been operated upon under anaesthetics, an increase of 511 over the previous year.

FRENCHAY PARK, BRISTOL.

The Bristol public health committee proposes to develop its Frenchay Park estate extensively on Alton lines, and so avoid the necessity of sending patients to distant hospitals. For many years the problem of crippling due to tuberculosis has been under active consideration by the committee, and it is now hoped to concentrate treatment locally at Frenchay Sanatorium. When this has been accomplished there will then only be necessary the provision of a seaside sanatorium to take up the function of Hayling Island in the Alton scheme. This addition will probably have to wait until private benevolence is forthcoming. The appointment of a consulting orthopaedic surgeon has enabled the facilities for treatment in Bristol to be made more complete. At the suggestion of the chairman of the health committee a small subcommittee has been formed to consult with other committees concerned with a view to providing better treatment for cases of crippling not included in the tuberculosis scheme. Children under the age of 5 suffering from paralysis and in need of institutional treament are dealt with under the infant welfare scheme; but there still remains a considerable number of patients for whom provision cannot be made by health committees, but who come under the care of the education committee, which is at present unable to obtain a grant for capital expenditure, although a grant is available for maintenance. Voluntary help is, therefore, necessary, but the Bristol education committee has been able to provide a clinic for physically defective children to accommodate 140. When necessary these children are conveyed to and from school in special ambulances. An orthopaedic surgeon has been appointed, and a fully equipped treatment centre is provided. It is hoped that by extending the accommodation of Frenchay estate it will be possible to economize expenditure considerably, and yet enable a finer building to be erected for the available money than would be the case if a site had to be found elsewhere.

Correspondence.

THE DECLINE OF LITHOLAPAXY.

SIR,—I have read with much interest the article in the BRITISH MEDICAL JOURNAL of April 11th (p. 690) by Major-General Hooton, C.I.E., Poona, India, formerly my house-surgeon at the Manchester Royal Infirmary, on the decline of litholapaxy. About six months ago my attention was drawn to this subject, for I found that in the previous ten years (1914-23), while only 6 operations of litholapaxy had been performed in the Manchester Royal Infirmary, the cases of suprapubic lithotomy were 65 in number.

On making inquiries at several of the London hospitals it was ascertained that litholapaxy, which during the war had temporarily fallen into disuse, was again coming into favour. Mr. Hamilton Bailey of the London Hospital informed me that in the ten years ending 1922, 34 cases had been treated by litholapaxy out of a total of 131 cases of vesical calculus. Mr. Geoffrey Keynes of St. Bartholomew's Hospital reports 19 cases of litholapaxy and 33 cases of suprapubic lithotomy during the same period.

In 1881 my first operation was performed for stone in the bladder. In 1910, on retiring from the active staff of the hospital, my last operation was undertaken, having in the interval operated upon 170 cases of calculus vesicae. In 62 cases, or more than one-third, litholapaxy was the operation selected. In the 62 cases of litholapaxy the operation proved fatal in only one case—namely, a male patient who was in his 73rd year.

Litholapaxy is an operation which may safely be performed at any period of life—in the very young as well as in those advanced in years. Six of the patients were between 70 and 80 years of age. Ten were under 10 years of age; in six the age did not exceed 5 years, the youngest being 3½ years of age.

My thanks are due to Mr. Geoffrey Keynes, Mr. Hamilton Bailey, and the surgical registrars at the Royal Infirmary (Messrs. Galloway and Scotson) for the above figures.—I am, etc.,

F. A. SOUTHAM,
Consulting Surgeon, Manchester Royal Infirmary.

April 11th.

THE SEPARATION OF THE PLACENTA.

SIR,—I was very interested to read Dr. Vaughan's memorandum on the separation of the placenta (BRITISH MEDICAL JOURNAL, April 4th, p. 656).

For many years it has been my custom to leave untied the maternal end of the umbilical cord. The chief advantage lies in the better separation of placenta and membranes. It is difficult to say whether it lessens the risk of septic infection through the maternal sinuses.—I am, etc.,

BETHEL SOLOMONS.

Dublin, April 4th.

SIR,—When assistant in a rural district in the North of England nearly fifty years ago, I was much concerned with the large proportion of cases requiring manual removal of the placenta, and I began the practice of single ligature. I was so impressed with the advantages of it that it has been my invariable practice ever since, and it must be quite forty years ago that I explained its advantages to the class in the Rotunda, but it did not catch on. My original idea was that it lessened the bulk of the placenta, which it does, but it also allows it to fold up so that the edge presents, and it occupies less space in expulsion. I quite agree with Dr. Vaughan that it allows the uterus to contract more efficiently, and lessens haemorrhage, but also, if manual expression is necessary, it is much more likely to be successful.—I am, etc.,

W. G. EVANS.

Frome, April 5th.

SIR,—The late Dr. D. Berry Hart taught that the maternal end of the cut umbilical cord should not be tied, except in the case of twins. His recommendation was based on his theory of the method of the separation of the placenta. See his *Guide to Midwifery*.—I am, etc.,

C. J. HILL AITKEN, M.D.

Kilnhurst, nr. Rotherham, April 4th.

TREATMENT OF DIABETES BY RAW FRESH GLAND (PANCREAS).

SIR,—I was interested in the observations of Dr. Hollins and of Dr. Young in the BRITISH MEDICAL JOURNAL of March 14th (p. 503) and March 28th (p. 632), and decided to repeat their experiment under carefully controlled conditions.

The first case was a severe one of five years' duration—a woman aged 34, who has been treated with insulin for the last two years. For the last twenty-five weeks she has been on a constant intake of 60 g. carbohydrate, 70 g. protein, and 150 g. fat, together with 20 units of insulin, half an hour before breakfast, and 14 units just before tea. Under these conditions her blood-sugar curve has been much the same day after day (see columns 2 and 3 of table). From March 27th to 31st, both inclusive, she ate daily 2 oz. raw pancreas with her lettuce, the diet and dose of insulin remaining constant. The pancreas was obtained through the courtesy of Messrs. The British Drug Houses, Ltd. It was frozen immediately after removal from the body, and kept on ice right up to the time that it was minced by the patient, a few minutes before eating it with her meal.

Had the raw pancreas any influence on the diabetic state the blood-sugar curve on the fifth day (March 31st) would have been at a lower level, and there would probably have been symptoms of hypoglycaemia during the five days she was taking the raw pancreas. It will be seen from the table printed below that the blood-sugar curve was not appreciably affected: there were never any signs of hypoglycaemic reaction.

Hours after Insulin.	Blood Sugar, mg. per 100 c.cm.		
	March 17th, 1925: 20 units Insulin; no Raw Pancreas.	March 24th, 1925: 20 units Insulin; no Raw Pancreas.	March 31st, 1925: 20 units Insulin; fifth day on Raw Pancreas.
0	223	190	229
1	215	203	206
2	195	147	161
3	154	89	105
4	119	94	74
5	116	108	79
6	101	108	82

Note.—Breakfast 1/2 hour and lunch 3½ hours after the insulin. On March 31st, 1925, 5 grams of the protein of breakfast were taken in the form of 1 oz. of raw fresh pancreas.

A second patient, a little girl aged 4, who has been on a fixed intake of 40 g. carbohydrate, 50 g. protein, and 80 g. fat, with 35 units of insulin daily, was given fresh raw pancreas by her mother, who obtained it from her butcher herself. She arranged with the butcher that the pancreas should be delivered within a few hours of removal from the body. The child ate 6 oz. in a period of fourteen days, the diet and dose of insulin being unaltered. Neither the hyperglycaemia nor the glycosuria was in the least influenced.

It will be seen, then, that I am unable to confirm the opinion of Dr. Hollins and Dr. Young as to the value of raw fresh pancreas. From the many investigations on insulin reported in the literature, I did not expect that raw fresh gland taken by the mouth would act as a supply of insulin to these patients, but there was the possibility that while their clinical observations were correct, the interpretation of the results was a different one. I would ascribe the improvement obtained by Dr. Hollins and Dr. Young in their patients to alterations in the diet, and not to the action of raw fresh pancreas. At any rate, I maintain that it is unwise in diabetes to claim improvement as due to any particular preparation (including insulin) unless the diet be fixed rigidly and the effect of the diet alone be determined over a period of several weeks or months before trying the preparation. My reason for this is the well recognized fact that (quantitative) dieting alone may achieve such astounding results, particularly in diabetes of short duration.

In *experimental* work, in order to demonstrate the part played by insulin, I should try the effect of diet alone in the first place, and then add insulin to the same fixed diet. In *ordinary practice*, needless to say, like many other physicians, I often make use of both insulin and quantitative dieting from the very first day of treatment.—I am, etc.,

G. A. HARRISON, M.B., B.Ch.

The Hospital for Sick Children, Great Ormond Street, W.C., April 8th.

NODAL FEVER.

SIR,—Dr. Lendon's article on nodal fever (JOURNAL, April 4th, p. 651) raises some interesting questions in regard to this disease. I am, as he says, in general agreement with him in regarding erythema nodosum as a specific infective fever, but before that view is generally accepted several points will have to be cleared up.

In England and on the Continent erythema nodosum has a definite seasonal incidence, the largest number of cases occurring in the second quarter of the year. The absence of such seasonal incidence in Australia is probably due to the more equable climate, but it would be interesting to know if measles and scarlet fever in Australia show characteristic curves as they do in this country. Very wisely Dr. Lendon has laid emphasis on two symptoms of the disease—namely, phlyctenulae and subungual haemorrhages—for the diagnostic value of these has not been generally recognized.

Most of the acute fevers have been ascertained to have a definite incubation period, and a fixed time between the initial symptoms and the appearance of the rash. Both these periods are very indefinite in nodal fever, and it is desirable that observers should publish cases in which one or both appear to be clearly defined.

Before accepting Dr. Lendon's view that erythema multiforme and erythema nodosum are but phases of the one specific fever, further evidence must be brought forward. The first point to ascertain would be whether erythema multiforme has the same infectivity, epidemicity, seasonal, age, and sex incidence as nodal fever. I certainly have seen cases in which it was impossible to say whether the condition was erythema nodosum or erythema multiforme. While agreeing that the proportion of tuberculous manifestation *preceding* nodal fever is not greater than one would expect, considering how widely spread tuberculosis is, yet I should differ from Dr. Lendon when he says that tuberculous sequelae are comparatively rare. I have witnessed such in at least 10 per cent. of my cases.—I am, etc.,

J. ODERY SYMES.

Clifton, April 6th.

HEART STRAIN.

SIR,—The letter by Dr. E. S. Miller (JOURNAL, March 7th, p. 482), criticizing Dr. Pullar's and Dr. Brockbank's suggestion that the pressure transmitted backwards from the aorta to the left ventricle during diastole would be greater in the case of a small leak than in that of a large, is opportune, and his conclusion appears to me sound. The size of the leak makes no difference on the wall of the ventricle, for the reasons he states. One must not, however, accept his statement, "there is no analogy whatever with the effect of a Bramah press," beyond the purpose for which he applies that statement.

The heart beat throughout can only be fully understood and followed if the principle of the Bramah press be grasped. For instance, suppose that the aortic orifice were 1 inch square in area, and the internal surface of the ventricle 6 square inches in area, at the moment the ventricle contracts: the ventricle would then have to exert a force great enough to produce a pressure equal to the aortic pressure on each of the 6 square inches of its surface. When, by contraction, it had reduced its internal area to 3 square inches it could produce an equal pressure on those 3 square inches, with only half the force it had to exert when pressing on the 6 square inches of blood surface, and so on. Thus the ventricular effort would be ever decreasing as it contracted, though the pressure on the blood might remain the same.

Now I have shown, in many communications to the BRITISH MEDICAL JOURNAL, that the advantage the ventricle or auricle gains on contracting roughly increases inversely as the *cube* of the diameter, of which a large part—namely, the square—is due to the Bramah press principle, for the area of the inner surface decreases as the square of the diameter.

In the case of mitral stenosis, probably the chief reason why the heart can maintain its circulation for so many years is that the auricle, when by its contraction it becomes small, can force its residual contents into the ventricle through the narrowed orifice, even though the ventricle enter into contraction before the auricle has finished. The auricle, by starting its contraction first, becomes small, while the ventricle is filling and becoming large. Hence the auricle, being small, would be more than a match for the ventricle, being large, when their contractions overlap, as they appear to do.

Though the mitral orifice is incompetent, there is, as we know, no regurgitation and no systolic murmur. Nothing can explain this, unless we admit that the contracting auricle is capable of resisting any regurgitation, and, indeed, it is theoretically capable of actually driving its blood on through the narrowed orifice into the big contracting ventricle, while their contractions overlap.

It is only when the auricle dilates that a systolic murmur occurs, with regurgitation and cardiac breakdown.—I am, etc.,

D. W. SAMWAYS.

Mentone, March 31st.

INFECTIVITY OF SMALL-POX IN THE INCUBATION STAGE.

SIR,—In his letter (JOURNAL, March 28th, p. 636) Dr. Thomas states "emphatically that small-pox is not infectious even after the onset of the symptoms before the rash has appeared."

I must state just as emphatically that it is in certain cases, and give the following particulars to prove it.

Some years ago I was asked by one of the leading practitioners in the town to see the body of a young woman, who had died after two days illness. The symptoms were severe headache, vomiting, with subsequent coma and death. He had been in attendance since the onset of the illness, and attributed the death to some form of meningitis. Small-pox was present in the town, but there were no cases within a mile of the house of the patient, and there was no history that she had been in contact with a case of the disease. There was not the slightest evidence of any rash, congestion, or infiltration of the skin which could suggest small-pox. Such a case, according to Dr. Thomas, could not be infectious, yet twelve days later six members of the family were taken ill with symptoms of small-pox, and on the sixteenth day from the death of the woman there were eight persons in the home suffering from well marked and virulent small-pox, and the disease ended fatally in three.

Inquiries into another case of small-pox, which was discovered in another part of the town, elicited the fact that the young woman had visited the house a fortnight previous to the onset of her illness, when there was a concealed case of the disease. The remainder of the family had no connexion with the second house, and it is hardly likely that eight cases would occur simultaneously, unless the infection had actually been an intimate one, due to residing in the same house.

I have seen other cases which indicate that infection does exist before the rash appears, but none so definite as the above.—I am, etc.,

JAMES B. WILKINSON,
Medical Officer of Health.

Oldham, April 3rd.

IMMEDIATE AND REMOTE EFFECTS OF SUNLIGHT ON THE EPIDERMIS.

SIR,—As a worker with artificial sunlight since 1917, I should like to support Dr. Leonard Hill's views by saying that, "with due regard to dosage," I have never seen the slightest evidence to support the theory advanced by Sir Lenthal Cheatle.

In two cases of squamous-celled carcinoma of the hands, after excision of the growth, I have dressed the wounds with gauze and paraffin and treated them with short daily exposures of ultra-violet rays. The results in both cases were most satisfactory, healing with good clean tissue taking place in one case in six weeks, and in the other in four weeks. After eighteen months in the first case and two months in the second, there has been no sign of recurrence and the scars appear to be perfectly healthy. The preceding factor in one instance was apparently a wart,

in the other *x* rays. The growths in both were examined pathologically, and no doubt could be entertained as to diagnosis.

The case Sir Lenthal Cheatle refers to, in the last paragraph of his letter, was, I have reason to believe, a case of keloid. During the war and after I treated several cases of keloid with ultra-violet rays with most gratifying results. They are tedious, slow cases to deal with, but I have no hesitation in saying that good results are obtained from this method, and I have never seen the slightest sign of malignancy in any case. I merely refer to this because I think Sir Lenthal was under a misapprehension when he spoke of "speculative therapeutical procedure."

In conclusion I would like to refer to the condition of my own hands. After approximately 35,000 administrations of ultra-violet rays I think there is distinctly less sign of "biotripsis" than is customary at the age of 52, though I have never safeguarded my skin in any way.—I am, etc.,

London, W.1, April 6th. EDWARD JAMES DECK.

BACTERIAL VACCINES.

SIR,—On behalf of Dr. L. S. P. Davidson, who is at present abroad, may I take the opportunity of replying to the letter by Dr. Myer Coplans in your issue of April 11th (p. 717)?

If Dr. Coplans will refer to the *Edinburgh Medical Journal*, April, 1925, vol. 32, transactions of the Medico-Chirurgical Society of December 3rd, 1924, pp. 70-78, he will obtain striking evidence in further support of Dr. Davidson's contentions regarding the antigenic value of different types of vaccines. This is embodied in a paper by Dr. Davidson on immunity to the pneumococcus (abstracted in the BRITISH MEDICAL JOURNAL, December 27th, 1924, p. 1200).

Having followed closely Dr. Davidson's work, and appreciating the difficulties in interpreting results put forward by Dr. Coplans, I think this paper should help to reassure the latter with regard to the claims which he criticizes. In the experiments recorded in this communication the criterion of immunity has been actual protection of animals from multiple lethal doses, and it is of some interest in regard to the significance of antibody reactions that the results should lead to the same conclusions as those arrived at in the previous paper which Dr. Coplans now comments on.—I am, etc.,

T. J. MACKIE,

April 13th. Professor of Bacteriology, University of Edinburgh.

THE MAKING OF SERUM PEPTONE.

SIR,—In my article on this subject, published in the JOURNAL of March 7th, I omitted to mention that with the stronger solutions of peptone, the serum peptone may not appear very readily or get detached from the blood clot sufficiently freely to be poured off. To prevent this, as soon as the tube is removed from the incubator I pass a long and very thin bistoury right round between the blood clot and the glass. Next day, the clot will have collapsed, and the upper part of the tube contains a clear fluid, which is readily poured or pipetted off. It may be as well to mention this.—I am, etc.,

London, W.1, April 8th. A. G. AULD.

Obituary.

DR. WILLIAM WATKIN LEIGH, who died suddenly on April 10th, in his 71st year, was educated at Cowbridge School, King's College, London, and Guy's Hospital, obtaining in 1878 the diplomas L.R.C.P.Ed., M.R.C.S.Eng., and L.S.A.Lond. He joined his father, Dr. John Leigh, in practice at Llanfabon, Nelson, and Treharris, and after his father's death in 1885 he continued the practice until 1919, when he retired, his son, Dr. H. V. Leigh, succeeding him. Dr. Watkin Leigh had held the following appointments: medical officer of health for Llanfabon; senior surgeon to the Ocean colliery, Treharris; the Dowlais-Cardiff colliery, Abergynon; Penalta colliery, Gellygaer; certifying factory surgeon to the Nelson district; Poor Law medical officer and public vaccinator for the Nelson district of the Pontypridd Union, and for the Treharris, Trelewis, Bedlinog, Gellygaer, Bargoed, Ystrad Mynach, and Llanbradach districts of the Merthyr Tydfil union; medical officer to the Board of Education and the Post Office at Treharris, Bedlinog, and Nelson; medical referee for numerous medical insurance companies; and he was a member of the honorary medical staff of the Pontypridd Cottage Hospital. He was an ex-president of the South Wales and Monmouthshire Branch of the British Medical Association, and a member of the Cardiff Medical Society. He was also a member of the governing body of the Church of Wales, and he took a great interest in public affairs of all kinds; he was made a justice of the peace for the county of Glamorgan in 1885. He is survived by his wife, two sons, and one daughter.

DR. E. TENISON COLLINS of Cardiff died on April 8th. He was a native of Staffordshire, and received his education at the Universities of Edinburgh, Birmingham, and Cambridge; he took the diplomas of L.S.A. in 1880 and M.R.C.S. in 1890. After serving as house-surgeon at the Jessop Hospital for Women, Sheffield, and resident obstetric assistant at the Queen's Hospital, Birmingham, he settled in Cardiff, where he became gynaecologist to the Cardiff Infirmary, the Pontypool Hospital, and Cardiff City Mental Hospital, as well as consulting gynaecologist to the Bridgend and Abergavenny Hospitals. Throughout his life he was closely associated with the Volunteer and Territorial movements, and held the rank of lieutenant-colonel R.A.M.C.T.(ret.). He had received the Territorial Decoration. He commanded the 2nd Welsh Field Ambulance at Gallipoli in 1915, and subsequently was in charge of one of the medical boards at the Cardiff recruiting headquarters. He was an ex-president of the Cardiff Medical Society. He took great interest in all sports, and was one of the founders of the Welsh Golfing Union, of which he was for many years secretary and later president. He had recently undergone an operation, from which he appeared to be making a quick recovery, when a relapse set in and proved fatal.

Universities and Colleges.

UNIVERSITY OF LONDON.

THE following have been recognized as teachers of the University in the subjects and at the institutions indicated:

London Hospital Medical College.—Dr. G. Riddoch (medicine).
Maudsley Hospital.—Teachers of Mental Diseases: Dr. H. Devine (psychology), Dr. B. Hart and Dr. F. C. Shrubsall (psychiatry), Dr. E. Mapother and Sir Frederick W. Mott, F.R.S. (psychological medicine), Dr. W. C. Sullivan (criminology and forensic psychiatry).

Mr. James Sherren, C.B.E., F.R.C.S., has been reappointed the representative of the Royal College of Surgeons of England on the Senate.

The ceremony of presentation day will be held in the Royal Albert Hall on Wednesday, May 13th, at 3 p.m. The annual service for members of the University will be held at Westminster Abbey at 5.45 p.m., when the Right Rev. L. H. Burrows, D.D., Bishop of Sheffield, will preach, and the graduation dinner will take place at the Drapers' Hall, Throgmorton Street, at 8 p.m. on the same day.

Four lectures on cardiology will be given at University College Hospital Medical School by Dr. John Hay, Professor of Medicine, University of Liverpool, on June 11th, 12th, 18th, and 19th, at 5 p.m.

Dr. B. Brouwer, Professor of Neurology in the University of Amsterdam, will give a lecture at Charing Cross Hospital Medical School, on a date in May to be announced later, on the projection of the retina in the brain.

Four lectures on physiology will be given by Dr. H. H. Dale, C.B.E., F.R.S., head of the Department of Biochemistry and Pharmacology under the Medical Research Council, at St. Bartholomew's Hospital Medical School, on May 15th, 19th, 22nd, and 29th, at 5 p.m.

A course of lectures on medical hydrology will be given at the central buildings of the University from April 27th to May 2nd. The lectures will be supplemented by demonstrations and clinical lectures at a British spa.

A course of lectures on mental deficiency, supplemented by a course of clinical instruction, will be given at the central buildings of the University from May 18th to 23rd.

Applications for grants from the Dixon Fund for assisting scientific investigations must be received by the Academic Registrar not later than the first post on May 15th, from whom further particulars may be obtained.

A Carpenter medal, together with a money prize of the value of £20 in all, will be awarded by the Senate in 1925 for a thesis

of exceptional distinction in statistical, genetic, comparative, or experimental psychology, including the functions of the central nervous system and special senses for which a doctor's degree (other than the Ph.D. degree) has been awarded during the period of three years ending on May 31st, 1925. No award will be made unless a thesis of sufficient merit is presented. Applications must be sent to the Academic Registrar by June 10th, from whom further particulars can be obtained.

Applications for grants from the Thomas Smythe Hughes Medical Research Fund for assisting original medical research must be sent to the Academic Registrar not earlier than May 1st and not later than June 15th, 1925.

April 23rd is the latest date for the receipt of applications for the University chair of biochemistry, tenable at the Middlesex Hospital Medical School; salary, £800 a year.

UNIVERSITY OF GLASGOW.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—M. Allan, C. W. Anderson, Bessie R. Barr, J. Barr, M. J. Bastible, J. A. Bell, D. M'D. Bell, N. L. Bennie, Ann K. Black, A. D. Boyd, W. Brock, A. R. Brown, D. Brown, H. Brown, Edna W. Bruce, D. R. Campbell, A. Clark, A. F. Clark, J. S. Clark, D. H. Clutterbuck, E. Cochrane, J. M. Cormack, Elizabeth Coupland, J. Craw, J. Crawford, C. Cross, J. Cunningham, Janet B. Cunningham, M. Curran, R. A. Currie, Eileen M. Deane, R. C. Deans, M. C. Douglas, G. D. Drever, Lucy M. Dron, W. W. Ferguson, J. W. Ferrie, A. J. Finlayson, J. D. Finlayson, J. Flynn, J. C. Forsyth, J. M'M. Forsyth, M. A. Foulis, C. A. I. Fuge, Elizabeth S. Galbraith, W. D. Gillespie, T. L. Gordon, Tina Gray, R. G. R. Grieve, J. B. Harrower, R. Harvey, Ellen M. Hegarty, J. Hill, G. Hutcheson, *R. G. Hutchison, R. S. Hynd, J. A. Imrie, T. Imrie, R. F. Innes, Dora Karnovski, D. H. Kinmont, N. M'A. Lees, A. Leiper, M. Lurie, T. B. M'Aleer, D. A. P. Macalister, A. MacArthur, I. E. MacArthur, J. C. Macarthur, A. G. M'Callum, D. M'Callum, N. M'Diarmid, P. A. M'Dougall, D. T. M'Gibbon, J. MacGowan, E. J. MacIntyre, N. D. Mackinnon, A. MacLachlan, S. H. P. M'Lauchlan, N. MacI. MacLean, Elizabeth V. MacLeod, H. A. Macmillan, W. M'Millan, A. S. M'Neish, T. S. Meighan, W. Meiklejohn, Isomay Mitchell, C. M. Morton, J. Munn, A. G. M. Murdoch, D. S. Murray, J. A. Murray, S. D. S. Park, J. Paterson, W. Paterson, J. Peter, Margaret I. Prangnell, L. W. Queich, R. Ramsay, H. C. Reid, T. G. Rennie, A. Roberts, G. S. Robertson, H. J. Scott, Gertrude R. S. G. Smith, H. Smith, J. Smith, J. T. Smith, W. H. Smith, W. F. Stalker, G. R Stark, Norah MacK. Steele, T. J. Steven, W. R. M. Stevenson, M. Stewart, J. M. Stobo, T. F. Strang, D. Struthers, J. W. Struthers, W. Tait, Matilda D. Tennent, D. Thomson, J. Thomson, P. D. Thomson, R. N. Walker, Agnes B. T. Warden, J. Warren, A. W. Watt, J. D. Wilson, J. Wilson, G. M. Wyburn, J. Young.

* With distinction in surgery.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

AT the monthly meeting of the Royal Faculty of Physicians and Surgeons of Glasgow on April 6th the following were, after examination, admitted Fellows: James Pearson Brown, D.S.O., Arthur Charles Lodge La Frenais, Thomas Murray Newton.

Dr. James Alexander Adams was elected the representative on the General Medical Council for a period of five years.

Medical News.

THE Minister for Local Government and Public Health of the Irish Free State has appointed a committee to advise him on the question of the future position regarding medical registration. The committee consists of Senator Dr. O'Sullivan, Dr. T. Hennessy, T.D., Professor A. F. Dixon, Sir James Craig, T.D., Mr. Maunsell, Dr. Coffey, and Dr. Magennis.

THE new nurses' home in connexion with the Royal Berkshire Hospital was opened by H.R.H. Princess Mary, Viscountess Lascelles, on April 7th. The home is a building of three stories, and will accommodate ninety nurses. The British Red Cross Society made a grant of £15,000 towards its cost. Princess Mary subsequently visited the Royal Berkshire Hospital and was conducted over the wards, giving special attention to the children's ward, which was endowed as a county memorial to King Edward VII. She also paid a short visit to the Girls' Friendly Society Hostel, which bears her name, and represents part of the gift of Reading to her on the occasion of her marriage.

THE Committee for the Study of Medical Hydrology in England invites all medical practitioners interested in the subject to take part in the course of lectures and demonstrations at the University of London, April 27th to 30th. Lectures will be given by Dr. Thresh on types of water, Mr. Dewey on hydrogeology, Professor Barcroft on the capillary circulation in the skin, Dr. Fortescue Fox on the use of heat in the treatment of disease, Dr. Burt on disorders of digestion, Dr. Coates on arthritis, and Dr. Rupert Collins on neurasthenia; a visit will afterwards be paid to Buxton. Those proposing to be present at the lectures or at Buxton are asked to notify the Honorary Secretary, Hydrology Committee, University of London, South Kensington, S.W.7.

THREE post-graduate lectures have been arranged at the Manchester Babies' Hospital, Burnage Lane, Levenshulme, To-day (Friday, April 17th) Dr. Leonard Parsons (Birmingham) will speak on the role of fats in the production of infantile atrophy. On Friday, May 1st, Dr. George Graham deals with the use of insulin for young children, and on Friday, May 15th, Miss Herzfeld, F.R.C.S., will lecture on hernia in infants. The lectures will be delivered at 8 p.m.

A COURSE of ten lectures on the treatment of functional nerve disease will be given at the Tavistock Clinic for Functional Nerve Cases, 51, Tavistock Square, W.C.1, on Tuesdays at 5 p.m., commencing on May 5th. The fee for the course to medical practitioners is £2 2s. and for medical students £1 1s. A syllabus of the lectures and further particulars can be obtained on application to the Honorary Lecture Secretary at the clinic.

THREE lectures on recent advances in the study of living cells will be given at King's College, London, by Professor Robert Chambers (professor of microscopic anatomy in Cornell University, New York), on April 27th, 28th, and 29th, at 5.30 p.m. Admission is free.

THE annual congress of the Royal Institute of Public Health will be held at Brighton at Whitsuntide under the presidency of the Lord Lieutenant of the county of Sussex (Lord Leconfield). It will be opened on Wednesday, May 27th, when the mayor of Brighton will give a reception; the six sections will begin their discussions on Thursday, May 28th. In the Section of State Medicine and Municipal Hygiene there will be discussions on immunization against diphtheria, on tuberculosis and employment, on obstetrics and public health, and on the control of venereal disease. The Naval, Military, and Air Section will hold discussions on the teaching of hygiene, and on mother and child welfare in the army, on occupational deafness, and on bismuth in the treatment of syphilis. In the Sections of Industrial Hygiene, Tropical Diseases, and Pathology the presidents, who are respectively Sir Max Muspratt, Bt. (Liverpool), Dr. Andrew Balfour, and Professor E. C. C. Baly (Liverpool), will give opening addresses, to be followed in each instance by a number of papers. In the Section of Women and the Public Health discussions will take place on heliotherapy and actinotherapy, on the relation between mental and physical disorders, and on birth control in relation to infant and child welfare. The congress dinner will be held on May 28th, and a number of excursions have been arranged on other days.

THE annual general meeting of the Hunterian Society of London, which had been postponed, will be held on May 11th, at Simpson's Restaurant, Cheapside.

APPLICATIONS for the Dickinson surgery scholarship must be sent to the secretary to the trustees, Manchester Royal Infirmary, by April 30th. The scholarship is of the value of £75, tenable for one year, and is open to students who shall have received at the University and the Manchester Royal Infirmary instruction in pathology, medicine, and surgery necessary for taking the M.B., Ch.B.Manch. degrees.

AT the meeting of the Central Midwives Board for England and Wales on April 2nd Sir Francis Champneys, Bt., was re-elected chairman. The following appointments to act as representatives on the Board were announced: County Councils' Association, Mr. Leonard Henry West, O.B.E., LL.D.; Royal College of Surgeons, Dr. W. S. A. Griffith, C.B.E.; Society of Apothecaries, Mr. Charles Sangster, M.R.C.S., L.S.A.; Queen Victoria's Jubilee Institute for Nurses, Mrs. Bruce Richmond.

DR. PHILLIP JAMES, who has resided in Senghenydd for thirty-two years, has been presented by his friends and patients in the district with a public testimonial, consisting of a cheque for £428, in recognition of his great services to the community. Before going to Senghenydd, Dr. James practised at Pontypridd, and was one of the recipients of the bronze medal awarded in 1877 by the British Medical Association for heroic conduct, self-denial, and humanity at a colliery accident at Pontypridd.

DR. CANUYT has been nominated professor of oto-rhino-laryngology in the Strasbourg Faculty of Medicine.

DR. WRIGHT MASON, who recently retired from the office of medical officer of health for Hull, has been presented by the head officials of the corporation with a silver salver as a mark of their good will and esteem.

MR. J. D. ROCKEFELLER, jun., has presented £400,000 to the Tokyo Imperial University to assist in the restoration of the University library, which was destroyed in September, 1923. This will enable the University to enlarge the plan of the library and to perfect its fireproof, sanitary, and other equipment. The University has also received a grant of £130,000 from the Government. The new library will accommodate 1,000 students, as compared with 300 in the last building. A special fireproof stockroom is to be constructed for particularly valuable books.

THE London office of the Italian State Railways and State Tourist Department (12, Waterloo Place, Regent Street, S.W.1) announces that the annual international visit of doctors to Italian health resorts will take place from September 5th to 21st. Among the places to be visited are San Pellegrino, Fonte Bracca, Acqui, Alassio, San Remo, Ospedaletti, Bordighera, Pietra Ligure, Nervi, Rapallo, Santa Margherita, Portofino, Viareggio, Montecatini, Monsummano, Chianciano, Fiuggi. The members of the party (limited to 200 in number) will travel by special train in Italy and will be accommodated at first-class hotels. A limited number of places in the tour are reserved for members of the families of participants. Italian doctors, speaking fluent English, accompany the tour and assist in the medical conference held at each centre. The charge for the tour, including cost of travel from Milan to Rome, railway and hotel expenses, will be lire 1,600 (about £15). Members will be granted reduced rate tickets from the Italian frontier to Milan and from Rome back to the frontier.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.* Authors desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Financial Secretary and Business Manager, 429, Strand, W.C.2, on receipt of proof.

ALL communications with reference to advertisements as well as orders for copies of the JOURNAL should be addressed to the Financial Secretary and Business Manager, 429, Strand, London, W.C.2. Attention to this request will avoid delay. Communications with reference to editorial business should be addressed to the Editor, BRITISH MEDICAL JOURNAL, 429, Strand, W.C.2.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—not necessarily for publication.

Communications intended for the current issue should be posted so as to arrive by the first post on Monday or at latest be received not later than Tuesday morning.

THE telephone number of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is Gerrard 2630 (Internal Exchange). The telegraphic addresses are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London.*

MEDICAL SECRETARY, *Mediocera Westrand, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

QUERIES AND ANSWERS.

INCOME TAX.

Extension of Premises.

"H." bought a new house over a year ago, and, as there was no consulting room accommodation, had to build additional rooms at a cost of £700.

*** In our opinion, no portion of the £700 can be claimed as expenditure deductible for the purpose of income tax, Schedule D. Rule 3, applying to Cases I and II, Schedule D, is to the effect that "no sum shall be deducted in respect of . . . any sum expended for repairs of premises . . . beyond the sum usually expended for those purposes according to an average of three years. . . ." The exact meaning of that rule may be open to some doubt, but it is fairly clear that it would exclude by implication expenditure on adding rooms to an existing house. From a practical point of view, too, the £700 was capital outlay—that is, money invested to bring in returns over a future tract of time; "H." spent a certain sum in acquiring suitable premises, and it is immaterial that the total was laid out in two separate sums and not in a single payment for the final result.

LETTERS, NOTES, ETC.

IODINE IN WHEAT PRODUCTS.

MR. ALBERT E. PARKES, F.I.C., F.C.S., public analyst to the Metropolitan Borough of Poplar, has examined a number of specimens of wheat products to ascertain the amount of iodine present, with the following results:

White flour: Less than 1 per 5.00 .000.
Whole meal: 2.5 parts per 1.000 000 (17/100 gr. per lb.).
Bran: 3.8 parts per 1,000,000 (27/100 gr. per lb.).
Middlings: 0.6 part per 1 000,000 (1/ 50 gr. per lb.).
Germ: 3 parts per 1,000,000 (26 100 gr. per lb.).
Results expressed as iodine: Iodine × 1.2 = sodium iodide.

GALL STONES.

DR. DOROTHY A. DALY (Fairlight Sanatorium) writes: I have been interested in the correspondence regarding the age at which gall stones may be found. When a student in Trinity College, Dublin, a girl of 11 was brought into one of the Dublin hospitals as an emergency case of appendicitis. On opening the abdomen the trouble was located in the gall bladder, from which two fair-sized stones were removed. I almost think this establishes a record.

A NEW TUBERCULIN.

WITH reference to Dr. Lundie's paper, "A new tuberculin," in the BRITISH MEDICAL JOURNAL of February 28th (p. 405), Dr. A. W. CRAWFORD (Bolton) has forwarded the following criticism and queries:

(1) Which serum is used, human or bovine? (2) At what stage is it used—whether in the early stage, when bovine infection is predominant, or in the second stage, from 13 to 19, when there is a combination of human and bovine, or in the later stages, when the human only is found? (3) In one patient both were used with great benefit. To which preparation must the benefit be attributed? It is necessary to understand clearly the stage of the disease and the nature of the tuberculin used. (4) Dr. Lundie asks about a solvent for acid-fast substances associated with the bacillus. The coating of the bacillus consists of insoluble salts with animal matter, of which fat is a constituent. They are soluble in a solution of potash; acetic acid, in my opinion, is preferable to hydrochloric acid. (5) Dr. Lundie states that guinea-pigs are more susceptible to tuberculosis than man: which form, human or bovine?—a very important distinction. (6) Wherever tubercle is deposited there is associated with it the growth of fibrous material, which is nature's method of delimitation, and is of epithelial origin, as in cancer. If this encasing substance is sustained, calcification would ensue and tuberculosis receive a check. I should like to suggest to Dr. Lundie that this might be accomplished by the use of a properly selected tuberculin, combined with prepared juices of embryonic tissues. How far this may go to prevent the spreading of tuberculosis I cannot say, but I think it is a step on the way.

We have submitted this letter to Dr. Lundie, who writes:

In reply to Dr. Crawford's very kind criticism, I use the word "tuberculin" in its original sense, which does not include serums. (1) I have used both human and bovine preparations. (2) "Stage" here would be better expressed as "age incidence." I do not think it a useful guide to treatment, but agree that it is most important to understand both the type of infecting organism and the nature of the therapeutic agent. (3) Both preparations appeared to do good. (4) I did not ask, as I am sure about this point. The acid-fast material is mycol laurate, said to be held in the form of an emulsion in a protein substrate. I believe it is probably chemically united to protein. (5) I stated that man has a much greater natural resistance than guinea-pigs or rabbits. Bovine tuberculosis is always more virulent to these animals than to man, and I think the human type is sometimes so also. I believe that many children become immunized in course of time by a series of subinfective doses of tubercle bacilli, administered in all good faith in their milk. The majority of guinea-pigs or rabbits similarly fed would die. (6) There are no epithelial cells concerned in the process. Calcium salts penetrate tubercles with remarkable ease, despite their density and non-vascularity, but the impregnation with calcium experimentally has not been proved to have any beneficial value at all. I do not know what benefit embryonic extracts would confer, beyond causing protein shock, which would be better avoided.

GOATS AND COWS.

DR. S. K. VINES (W. Hythe, Kent) writes: The old-style farmer has long believed that keeping a goat among the cows "prevents miscarriage." This is interesting in the light of recent contributions in your columns on the resemblance between *B. melitensis* and *B. abortus*. Goats would seem not to be subject to epizoötic abortion. I do not know what proportion of them in this country carry, or have immunity from, *B. melitensis*. Probably the goat vaccinates the cow with a dead culture.

WILLIAM LEVETT.

G. E. W. writes to point out that the last line on Levett by Dr. Johnson should run "His single talent well employ'd"—not "simple" as printed by inadvertence in our issue of April 11th (p. 705).

CORRECTION.

IN our reference on April 11th (p. 722) to the fourth International Medical Congress of Industrial Accidents and Diseases at Amsterdam it should have been stated that the president of the Congress is Dr. P. H. van Eden of Amsterdam, and that Sir Thomas Oliver is president of the British executive committee. The Minister of the Netherlands is honorary president of the British executive committee.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 38, 39, 41, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *183*.